



amateur radio

Vol. 35, No. 10
OCTOBER
1967

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T.C.A. (Phillips) Low Band, FM Mobile Units, 12 volts, xtal locked, 120 Kc. bandwidth, operating frequency approx. 80 Mc. complete with all valves and vibrator and microphone. Suit Amateur conversion. Good condition. Our Price, less Xtax, \$25 freight and packing extra.

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Two Station Model also available. Price \$10.50.

Three-Station Intercoms, as per above, one master and two sub-stations. Price \$14.75.

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A & R Type PS64

- Unlimited operation of battery operated transistor equipment from 240v. a.c. mains at negligible power cost.
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- Approved by Electricity Supply Authorities.
- Maximum voltage limited to 7.75v. or 11v. at low current to protect transistor capacitors.
- Filtered to ensure hum-free operation.
- 6 or 9v. (nominal voltage) selected by external switch.

Specifications—Input: 220-240v. 50 c.p.s. Output DC: 7.75/11v. over no load to full load current range; or 5.6/7.75v. over no load to all load current range. Ripple voltage: 6v. output, 1.5 per cent. max. Ripple voltage: 9v. output, 0.3 per cent. max. Dimension 3 1/2 x 2 1/2 x 2 in. Price \$19.50.

WALKIE-TALKIE TRANSCIEVERS

CITIZENS BAND

"Communicator" Model WT400, 4 transistors, 27.240 Mc. Crystal locked transmitter, 50 mW. output. Range approx. 2 miles open country. Price \$38.00 a pair.

"Lamie" Model FR797, 9 transistors, superheterodyne, crystal locked receiver and transmitter, 100 mW. output. 27.240 Mc. P.M.G. approved. Range approx. 5 miles in open country. Price \$59.50 a pair.

"Tokai" Model TC-911, 9 transistors, superheterodyne, crystal locked, individual speaker and microphone. P.M.G. approved. 27.240 Mc. All metal construction, complete with leather case. Range approx. 1 to 8 miles in open country. Price \$90.00 a pair.

Spare Aerials for above sets, \$3.00 each. Other Spares readily available.

2 Watt and 5 Watt Transceivers are available also. Price on application.

LOUDSPEAKERS, "PEAK" HI-FI

Type	Size	Frequency C/S	Maximum Input	Price
Twin Cone Types:				
6A7	8 in.	60-16,000	5 watts	\$5.50
8A7	8 in.	50-16,000	8 watts	\$7.50
12A9	12 in.	30-13,000	20 watts	\$19.75
Coaxial Type with "Free Edge" bass cone and horn tweeter				
ECX50	8 in.	30-22,000	15 watts	\$23.75
10CX50	10 in.	25-22,000	20 watts	\$36.00
12TX50	12 in.	18-22,000	25 watts	\$62.50
Single Cone "Free Edge" types:				
5A50	5 in.	50-15,000	8 watts	\$15.00
Professional Series:				
H50 Horn Tweeter, 2,000-20,000			15 watts	\$11.10
6M50 6 1/2" Spoker 200-6,000			25 watts	\$21.00
8L50 8 in. Woofer 37-4,000			15 watts	\$28.25
10L50 10 in. Woofer 25-3,000			20 watts	\$41.00
12L50 12 in. Woofer 17-2,500			30 watts	\$64.00

Please Note—A7 and A9 types are available in either 8 or 15 ohm V.C. Also, CX50, TX50 and Professional types, 15 ohm only.

WIDE RANGE TWIN CONE

LOUDSPEAKERS

5 in. Tweeter, 4,000-18,000 c/s, 15 watts r.m.s., 15 ohm V.C.	.....	\$4.30
8 in. Twin Cone, 40-12,000 c/s, 2, 8, 16 ohm V.C., 8 watts r.m.s., 16 watts peak power handling	.....	\$7.50
Twin Cone, Elliptical, 85-10,000 c/s, 5 watts r.m.s., 8 in. x 6 in., 7 watts peak power, 3.5 or 15 ohm V.C. Impedance	.....	\$6.55
12 in. T.C., 45-10,000 c/s, 8 watts r.m.s., 10 watts peak, 2, 8 or 15 ohm V.C. impedance	.....	\$9.85
12 in. T.C., 30-14,000 c/s (in recommended enclosure), 8 or 16 ohm V.C., 20 watts r.m.s., 30 watts peak power	\$41.00

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"AMATEUR RADIO"

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA FOUNDED 1910

OCTOBER 1967
Vol. 35, No. 10

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Parade, East Melbourne, Vic., 3002. Hours:
10 a.m. to 3 p.m. only.

Publishers:

VICTORIAN DIVISION W.I.A.
Reg. Office: 478 Victoria Parade, East Mel-
bourne, Vic., 3002.

Printers:

"RICHMOND CHRONICLE," Phone 42-2419.
Shakespeare Street, Richmond, Vic., 3121.



All matters pertaining to "A.R." other than
subscriptions, should be addressed to:

THE EDITOR,
"AMATEUR RADIO,"
P.O. BOX 35,
EAST MELBOURNE, VIC., 3002.

Acknowledgments will be sent following the
Committee meeting on the second Monday of
each month. All Sub-Editors should forward
their articles to reach "A.R." before the 8th
of each month. Any item received after the
Committee meeting will be held over until
the next month. Publication of any item is
dependent upon space availability, but in gen-
eral about two months may elapse before a
technical article is published after consideration
by the Publications Committee.



Members of the W.I.A. should refer all en-
quiries regarding delivery of "A.R." direct to their
Divisional Secretary and not to "A.R." direct.
Non-members of the W.I.A. should write to
the Victorian Division, C/o, P.O. Box 35, East
Melbourne. Two months' notice is required
before a change of mailing address can be
effected. Readers should note that any change
in the address of their transmitting station
must, by P.M.G. regulation, be notified to the
P.M.G. in the State of residence; in addition,
"A.R." should also be notified. A convenient
form is provided in the "Call Book".



Direct subscription rate is \$3.00 a year, post
paid, in advance. Issued monthly on first of
the month. February edition excepted.

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W.I.A. OFFICIAL BROADCASTS

NEW SOUTH WALES

VK2WI, Sundays, 1100 hrs. E.S.T.

VICTORIA

VK3WI, Sundays, 1030 hrs. E.S.T.

1825 Kc. a.m. 144.5 Mc. a.m.
3600 Kc. s.s.b. 145.854 Mc. f.m.
7146 Kc. a.m. 432.5 Mc. a.m.
53.032 Mc. a.m.

QUEENSLAND

VK4WI, Sundays, 0900 hrs. E.S.T.

3580 Kc. 53.995 Mc.
7146 Kc. 144.36 Mc.
14.342 Mc.

SOUTH AUSTRALIA

VK5WI, Sundays, 0900 hrs. C.S.T.

3.5, 14, 52 and 144 Mc. bands

WESTERN AUSTRALIA

VK6WI, Sundays,

TASMANIA

VK7WI, Sundays, 1000 hrs. E.S.T.

3672 Kc., and re-transmitted by
representative stations on—
7146 Kc. 144.1 Mc.
53.032 Mc. 432.6 Mc.

THE NEW "HANDBOOK"

FEDERAL Executive takes great pleasure in announcing that the new "Handbook" for the guidance of operators in the Amateur Service is now ready for printing.

Behind this deceptively simple statement lies nearly two years of negotiation and discussion between the Institute and the Postmaster General's Department and it is the purpose of this, and subsequent, notes to inform Institute members of the background and results of these negotiations—negotiations which affect all Amateurs in Australia, no matter whether or not they are members of the Institute.

At the Federal Convention held in Melbourne at Easter 1965 several subjects were raised which involved representation to the Department. They included such things as allowable sideband power, t.v.i. and portable operation. It became the job of Federal Executive to pursue these points with the Department and present the Institute point of view.

Accordingly a working party was formed consisting of Messrs. Hull, Williams, Connelley, Owen and Hepburn and for over three months this group met at least weekly and often more frequently. Every aspect of the Handbook was examined in the light of Institute policy and finally a submission was prepared which gave the Institute point of view on such diverse subjects as the status of the Amateur Service, t.v.i., age limits, acceptable sideband power limits, portable and mobile operation, modes of transmission, authority for the erection of masts and many other matters.

As a result of this submission, a series of meetings was arranged with officers of the Department.

At the first of these meetings—chaired by Mr. Eric Neilson (Asst. Director General—Telecommunications) those present were Mr. C. Carrol (Controller—Radio Branch), Mr. K. Buckley (P.M.G.) and Messrs. Williams, Owen and Hepburn of the Institute.

The points raised in the Institute's submission (and many others) were examined in detail and it soon became clear to both parties that a complete revision of the Handbook was necessary. As a result of a series of minor alterations over quite a long period the Handbook had become rather unwieldy and was often either obscure in its meaning or, worse, inconsistent within itself. Furthermore, in some places it did not accurately reflect the Regulations on which it was based and which it purported to explain and expand.

It was therefore agreed that both the Institute and the Department would,

separately, prepare drafts of a new Handbook and compare these drafts at a later date.

This exacting task, which was to occupy nearly all the spare time of the Executive working party for the next four months, was assisted by an analysis of the appropriate legislation (not only of Australia, but also of Britain and the United States) prepared by the Department.

At the second meeting held in November 1965, to review progress, it was immediately apparent that both the Institute and the Department were in complete accord on the philosophy behind the Handbook.

Some minor matters of wording remained to be resolved but both parties were obviously trying to express the same thoughts. With this heartening background, work continued through the Christmas break and a third meeting was held in January 1966, when the now completed drafts were again compared and moulded into a complete whole. A few "toughies"—notably that relating to t.v.i.—remained to be settled but in the main the new Handbook had taken shape. The Department undertook to steer the necessary regulatory changes through the appropriate legal channels and also to produce the final draft of the Handbook.

Due to the low priority accorded these regulatory changes, it was over a year before the Department was in a position to inform the Institute that the Handbook was cleared for printing.

FEDERAL COMMENT

As an interim measure, the situation with regard to the sideband power limit and the preferred method of measurement was clarified by a letter from Mr. Carrol which was printed in the December 1966 issue of "A.R." This letter stated that Australian Amateurs would be allowed a peak output of 400 watts on s.s.b. and also detailed the method of measurement to be used.

At the last meeting—held on 24th August, 1967—the final draft of the Handbook was checked and was equally satisfactory to both the Institute and the Department. Since the printing of the new Handbook will take some time,

the Institute has permission to print in "A.R." those parts of the new Handbook of immediate interest to Amateurs. The list is a long one and over the next few months it is the intention of Federal Executive to cover them in some detail giving both the changes themselves and the reasons for them.

Briefly, however, some of the changes (other than the s.s.b. power limit) are:

Reduction in age limit to 15 years for would-be Amateurs.

Five days /P operation for all classes of licence without prior departmental approval.

Recognition of the Amateur Service as such.

Reduction in log keeping requirements.

Clarification of c.w. examination marking standards.

Reduction of theory examinations to twice yearly.

Wider use of different modes of transmission allowed.

Freedom of choice for frequency measuring equipment.

Prior D.C.A. authorisation of antenna masts no longer a condition of issuing a licence.

The above list is not exhaustive, but serves only to indicate the way in which a wide variety of subjects have been examined and made to reflect present day conditions. Neither does such a list indicate the depth in which each subject was examined.

Between now and the time the new Handbook is actually available on the bookstalls, the Institute has the undertaking of the Central Administration of the Department that the provisions of the Handbook, as they express the policies of the Department, will be conveyed to the Radio Superintendent in each State.

Over and above the changes that have occurred in the rules governing the Amateur Service, there has been another gain which must be to the benefit of the Australian Amateur. That change is one for the better in the matter of relationship between the Department and the Institute. At the present time this relationship is extremely good and based on a mutual respect and understanding that has not hitherto existed.

Provided always that the Institute acts in a responsible and logical manner in seeking advantages for its members, then it will not seek to rein.

—HAROLD L. HEPBURN, VK3AFQ,
Federal Vice-President, W.I.A.

TRANSISTORISED REGULATED POWER SUPPLY

K. A. KIMBERLEY,* VK2PY

THE power supply described in my article "The Thing—Transistorised" ("A.R." August 1967) has been in regular use at VK2PY. During this time certain modifications have been incorporated into it and hence its usefulness has become even greater.

My power transformer, type ST3894, is rated at 0.5 amp. instead of 2.0 amp., as in the original Mullard circuit, hence the overload series resistor required alteration. R4 was increased to 20 ohms 40 watt. A 12 volt 100 mA. lamp (B.P.O. type No. 2) connected across R4 serves to indicate when an excessive load is being drawn from the supply. This modification does not seem to alter the regulation characteristics at load currents below 250 mA., however the regulation becomes progressively worse at higher loads.

Notwithstanding this slight degrading of its performance, the supply is still quite usable up to a load current of 500 mA. I know of five supplies having been built and all are giving satisfactory results. However, in some cases, the maximum output voltage has been somewhat lower than the design

● Readers are referred to the August 1967 issue of "A.R." page 9 for information on the original transistorised regulated power supply described in the author's article "The Thing—Transistorised". In this issue he submits details of modifications to the power supply which will be of interest to readers. Also a brief note re transistor testing, using the supply, is included.

METERING

The fixed range voltmeter has been changed to a multirange function:—

Position 1	0-10 volts
" 2	0-20 volts
" 3	0-500 mA.
" 4	0-50 mA.
" 5	0-10 mA.

The best voltage regulation is obtained when the meter range switch is in one of the voltage positions. This removes the meter shunts from circuit.

until the meter under test (M.U.T.) shows full scale and note the actual reading on the "standard".

Return voltage to zero and replace the 100 ohm resistor with one of about 10 ohms and repeat the above for both the 50 mA. and 500 mA. ranges. If the readings obtained indicate that no great errors have been made a start can now be made on the actual adjustments.

Set both the M.U.T. and the "standard" to the 10 mA. position and carefully turn up the voltage control until one of the meters reads 10.0 mA. If the "standard" reads full scale before the M.U.T., the resistance of the shunt is too low and conversely if the M.U.T. shows full scale first the shunt is high.

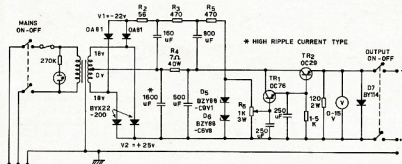
A shunt which is no lower than about 10% may be increased to the correct value by unwinding same and very carefully stretching it. A rewind job will be needed when the above procedure fails or if the shunt is more than 10% out of tolerance. A high shunt may be unwound to give the correct value or another resistor connected across it until the M.U.T. gives the same readings as the standard. The next two ranges are adjusted in the same manner.

Warning: Always switch the supply off whilst making adjustments, otherwise you are likely to wrap the meter pointer around the stop. The shunts should be cooled down with a "metho" soaked rag to prevent erroneous results caused by the "thermo couple" effect.

VOLTAGE RANGE ADJUSTMENTS

The purchase of two only 10K ohms 1% "high stab." resistors is the easiest way of obtaining satisfactory voltmeter results. The internal resistance of the meter adds to multiplier resistance. In my case, the meter resistance was 100 ohms and represents an additional 1% (on the 10 volt range). Hence the actual resistance tolerance becomes minus zero plus 2%. A further possible error of $\pm 1\%$, due to the calibration of the meter itself, should also be taken into account. At the worst, the overall error will be minus 1% plus 3% of f.s.d., and should not worry the average Amateur. The 20 volt range will be slightly better as the meter resistance now represents an error of only 0.5%.

(Continued on Page 18)



Original Circuit of the Bench Power Supply for Transistor Circuits.

figure. This is caused by the reference zener diode (S) being lower than 15 volts.

Zener diodes are usually supplied with a nominal tolerance of either 5% or 10%. Naturally the 5% ones are somewhat more expensive. Also due to the sorting methods used, at the factory, the odds are that the resulting diode stability will be on the low side. However, an increase in the reference voltage is obtainable simply by adding ordinary silicon diodes in series with the zener. Provided that the correct polarity is observed, each silicon diode will give about 0.75 volts extra.

D7 is used as a protective device and is not really necessary, hence this diode could be used as described in the preceding paragraph.

thus keeping the internal impedance of the supply to a minimum. The values shown in the diagram were calculated on the basis of a 1 mA. 100 ohm (i.e. 100 mV.) meter. Different meters may be used providing the shunts and multipliers are altered accordingly. My shunts were wound with the appropriate gauge solderable resistance wire (Bureka, etc.), and adjusted to the correct value.

CURRENT RANGE ADJUSTMENT

Connect the station multimeter and a 100 ohm resistor in series across the power supply. Keep the voltage output down to minimum and switch the meter range switch to the 10 mA. range.

At this stage it is wise to keep the standard multimeter, etc., on a higher range. Now carefully wind up the voltage

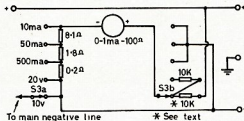


FIG. 1. MODIFIED METER CIRCUIT.

* 5 Don Street, Newtown, N.S.W., 2042.



WARBURTON FRANKI

NEWMARKET PACKAGED CIRCUIT AMPLIFIERS

	SPECIFICATION DETAILS:						
Data	PC1	PC2	PC3	PC4	PC5	PC7	PC9
Power Output mW.	150	400	400	400	3W.	800	Pre-Amp.
Input Imped. ohms	1.5K	1K	2.5K	220K	1.5K	1.5K	1M
Outp. Imped. ohms	40	15	15	15	3	8	600
Supply Volt. —volts ..	9	9	9	9	12	9	9
Typical Distortion % ..	2	3	3	3	3	3	1
Frequency response	300-15K	200-12K	200-12K	200-12K	50-12K	50-12K	20-20K
Overall Dimensions All 1/2" high.	2x1	2 1/2 x 1 1/2	2 1/2 x 1 1/2	2 1/2 x 1 1/2	5 1/2 x 1 1/2	3 x 1 1/2	2x1
PRICE	\$5.00	\$6.27	\$6.27	\$6.27	\$12.47	\$7.53	\$4.50

Plus Sales Tax 12 1/2% and Postage.

SUGGESTED APPLICATIONS:

PC1—Audio Amplifier, Intercom, Amplifier, Lab. Instr. Amplifier.
PC2—Modulator Drive Stage, Church Hearing Aid Amplifier, Tape Replay Amplifier, Mine Communication Amp, Telemetry Audio Amp.
PC3—D.C. Relay Driver, Sound-level Meter Amp, Low Power Battery Stereo, Heating and Ventilating Control Amp.
PC4—G.P. Amp. and Driver's Office Dictating Machines, Listening Booth Amps.
PC5—Portable Audio Amps, Car Radio Audio Amps, Servo Amplifier, Tape Relay Amp, Automation Drive Amp, Burglar Alarm Amp.
PC7—Tape Language Lab, Telephone Dictating Machine Amps, Control Amp. for Textile Machinery.

• Write or Call for Data Leaflet.

PRINTED CIRCUIT COMPONENTS

COPPER BACKED MATRIX BOARD

Size: 3" x 3" \$8c
6" x 6" \$1.75
9" x 9" \$3.63

Plus S.T. 12 1/2%. Plus Pack and Post 5c per board.

PROCESS KIT

Contains: Ferric Chloride, Bituminous Paint, Resin, and Instructions.

68c Plus S.T. 12 1/2%. Plus Pack and Post 10c.

ALSO PLAIN

COPPER BACKED BOARD

Size: 6" x 3" 20c
6" x 6" 36c
12" x 3" 36c
9" x 6" 48c
12" x 12" \$1.24

IMPORTED ROSENTHAL HIGH STABILITY RESISTORS

1 WATT RATING

- 15 ohms to 8.2 megohms \pm 1%.
- 11 megohms to 30 megohms \pm 2%.

18c each plus S.T. 12 1/2%.

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MODIFICATIONS TO B28/CR100 RECEIVERS

A. M. KEIGHTLEY,* VK6XY

HAVING received my call sign a couple of years ago, I settled down with a B28 and Geloso and 813, to enjoy Amateur Radio to the full. Some six or eight weeks after the first contact I plunged into my first R.D. Contest, which rapidly showed up the short comings of using the B28 in crowded band conditions today.

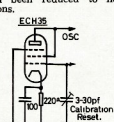
After some reflection I decided to embark upon a programme of improvement of the monster, with the stipulation that the full coverage features would not be impaired; firstly to retain the ability to check for spurious responses, were they starting to show up in the form of t.v.i. (that is another story) and, secondly, to continue to be used as a general coverage receiver for short wave listening.

I hope the ideas used prove to be of some use to other B28/CR100 users as well as to other receivers.

STABILISING OSCILLATOR

First move was to stabilise the h.f. oscillator, so an OA2 VR tube was fitted in an available corner and function switching arranged so that the h.f.o. ran at all times the receiver was on, even when the function switch was "off". The practice had been to turn this off for transmission as muting had not been arranged at this stage. By now drift with voltage changes had improved greatly, but an annoying feature became evident on s.s.b. signals.

When the line voltage jumped up or down by some 5 volts or more, the receiver drifted up or down, as the case may be, quite slowly over a period of a second or so. Considerable reading and discussion suggested that the culprit was the resistance of the cathode coating changing with the changes in temperature. As the cathode was grounded, I decided to try some external R so fitted up a carbon pot, and discovered that about 220 ohms could be introduced without upsetting oscillation on any band. So a 220 ohms 1 watt was wired in. The previous problem had been reduced to negligible proportions.



A further oscillator problem became noticeable for attention in the form of a considerable pulling on 15 and 10 metres. The receiver has a separate oscillator feeding the grid of the triode

section of an ECH35 which now adorned the place of the previous mixer (a 6K8G I think). Reckoning any try was worth while, and not having space for a cathode follower, I tried taking injection voltage from the 220 ohms resistor in the oscillator cathode instead of the previous method. This worked "fine" but calibrations had all jumped up a bit, but nothing a Philips' trimmer did not fix. The internal resistance was only minor compared to external so was "swamped" effectively.

Now sideband signals could be copied on 10 metres with a.g.c. pulling no problem. So on to the next item.

SELECTIVITY

A Collins 455 kc. filter came to hand the hard way, so I looked into the possibility of retaining the present arrangement of bandpass switching with the addition of the mechanical filter, but due to lack of space could not achieve this, so ended up removing the crystal filter and associated coils from the first i.f. and introduced the filter as the only connection between the mixer and 1st i.f., but was not happy with 2.1 kc. on a.m., so some fiddling around produced a very workable arrangement, shown in Fig. 2.

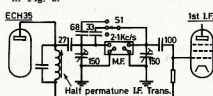


FIG. 2. I.F. SELECTIVITY CONTROL.

The grid resistor of 1st i.f. is 0.1 megohm.

The mixer plate feed was via an old i.f. transformer cut in half and adjusted to the frequency of the filter, then the 150 pF, air trimmer peaked up. The two capacitors of 33 and 68 pF. were then switched across the filter for wider bandpass. 33 pF. gave 3.6 kc. without upsetting the shape factor too much, while 68 pF. is good for broadcast band usage. The switch is the section of the passband switch which brought in the crystal filter.

Now the receiver passband is 8 kc., 3.6 kc., 2.1 kc., 1.1 kc., and 1.0 c/s. with original audio filter. The second 2.1 kc. position was later used to switch in a bridge T filter, which is introduced between the ECH35 and the filter, and takes care of heterodynes very nicely. Details came from R.S.G.B. Circuits Handbook, ex W.I.A., and uses a 12AX7 in conjunction with the other half of the wrecked i.f. transformer.

By now the receiver was performing quite well, but with an eye to future work on it I decided to make a lot more space available by replacing the large quantity of metal encased, under chassis

mounted, 0.1 uF. capacitors which seemed to occupy far too much territory. So out they came, to be replaced by disc ceramics across the valve sockets. This seemed to lift the overall performance, so the old ones must have been overdue for replacement. It is amazing how much extra space became available!

FITTING A VERNIER DIAL

The tuning with the 2.1 kc. filter seemed quite critical so a Jabel 6:1 ball bearing vernier was fitted on the front tuning shaft and a small bracket made up to secure it to the front panel below the knobs. This was 1" wide metal fitted so that it was very close to the tuning knob, to be out of the way of fingers in a hurry.

This made a fantastic difference and really speaks well of the B28 drive mechanism, as no back-lash is evident. These low priced little verniers should not be overlooked for any such application, they do a mighty job.

INCREASED GAIN

By now I was feeling fairly happy with things, but felt that gain could be increased with benefit. After playing around with various configurations, I ended up with an 6EH7 in the 1st r.f. position with a.g.c. on its grid and its own gain control in the cathode. This gain control was placed on the front panel above the present r.f. gain control which controls r.f. and i.f. gain.

EF39 valves were fitted to the 2nd r.f. stage and three i.f. stages without any instability troubles, and gain was well up.

REDUCED MIXER NOISE

There is always a "but" in my "delvings" and this was now internal noise, which was eventually traced to the ECH35. Shorting out the h.f. oscillator and grid one did not change things much, so it left the cathode and grids 2 and 4. After clearing the cathode, I started on grids 2 and 4, put a pot from this pin to ground and as I wound it around, so the noise went down. Quite a bit of checking ended up with 37 volts on that pin. The mixer noise disappeared and no other problems took its place; signals weak or strong were not upset, so I sneaked quietly onto the next section after taking out the pot, and replacing it with suitable resistors. Probably the high voltage on these electrodes was accelerating electrons to such an extent they bounced off the cathode, creating noise. That's my story and I'm sticking to it!

MUTING RECEIVER

Muting the receiver on transmission came in for discussion and the B28 handbook circuit used without complaint. All i.f. valves and the 2nd r.f. cathode resistors return to a common line and then to the moving arm of a 2K pot. which was modified as in Fig. 3.

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The upper 2K pot. originally had its lower end on ground. By adjusting the extra 2K pot. on transmit, the receiver is very good to monitor my own transmission. A small socket fitted on the rear of the chassis enables the leads to be taken to the transmitter and relay.

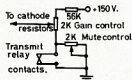


FIG. 3. MUTING CONTROL.

With the present push to talk arrangement in use, the receiver is instantly in the sensitive receiving condition with no delay that some muting systems suffer from.

DETECTOR

The detection department came in for the next attack. This had not been changed previously as I could see no easy way of switching from product to a.m. detector within the existing switching facilities.

diode triode can be replaced by it without any problems of trying to find space for an extra valve, and the extra switching required to change from the usual diode detector to product detector. I find it is very desirable to have an a.m. detector available, as there are still quite a few unstable a.m. v.f.o.'s!

To carry on the idea of reducing loading on the last i.f. transformer, the a.g.c. system was changed. This comprises one section of a triode used as a cathode follower. It gets its energy from last i.f. plate to give even further isolation from the b.f.o., and supplies a germanium diode and a series silicon diode as a gate. This also acts as a voltage doubler to give increased a.g.c. voltage and the circuit arrangement (Fig. 5) gives fast attack and slow decay. The extra time constant capacitor is switched into circuit by the b.f.o. switch.

The OA202 has a very high back resistance so decay time is controlled by the value of 2 meg. resistor. The B28 now has both r.f. and the three i.f. valves on a.g.c. and is able to take care of the strongest signals into this shack. In fact r.f. and i.f. gain controls are run flat out at all times, except on

triode in socket and with gain turned down and no signal, set cathode pot. for zero reading and you are in business. This arrangement gives a cut-off at about 4 volts a.g.c. fed to the half 12AT7.

The space for this valve came to hand by throwing the 5Y3G out and putting a pair of silicon diodes, BY100s, under the chassis on a tag strip.

At this stage of development, the receiver is performing very well and seems able to hold its own with most others and better than many, and still retains full coverage. The next project is to complete a stage started quite some two years ago, but shelved, to construct an s.s.b. exciter due to the t.v.i. mentioned earlier. That is to scrap the band 1 which used to tune from 60 to 160 kc. and rewind the coils and bandspread them to cover 500 kc. of some suitable area, either 3.5-4.0 Mc. or 4.5-5.0 Mc., and then some converters to go with it.

This has been a very interesting project so far. It has developed from much rag chewing on 80 metres and quite a bit of experimenting, during which I have learned quite a bit more about receivers and what makes them

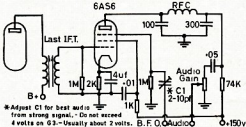


FIG. 4. AM-SSB DEMODULATOR.

A circuit published in the VK6 Bulletin was tried and proved to be ideal. This was developed by the Philco people and after some component changes (Fig. 4) worked better than expected. The original circuit showed how to obtain a.g.c. and S meter from it. Do not persist with these as other circuits work much better for these.

The 6AS6 has an odd grid 3, which has control over the electron stream similar to a grid 1, and its operation as a suppressor is not impaired by being 1 meg. above ground. Feeding the last i.f. into the high impedance of grid 1 instead of the usual diode detector, reduces the loading on its winding and it improves the selectivity in receivers where this is a problem and naturally is able to develop a greater voltage.

Detection of a.m. signals takes place in the grid-cathode area and is amplified in the grid-anode circuit.

To receive c.w. or s.s.b. signals only entails energising the b.f.o. Very efficient mixing takes place in the suppressor-anode area, and a further benefit appears. Grid 2 so effectively prevents b.f.o. signal getting back to grid 1 that a.g.c. action is not affected by b.f.o. voltage at any time.

The 6AS6 is quite able to drive a 6V6G to much greater sound level than I can stand! So this means the usual

80 metres. The overall arrangement maintains between 1 and 1½ volts of r.f. on grid 1 of the 6AS6 on all signals above about S2 signals. The a.g.c. worked so smoothly I decided to put in an S meter, shown in Fig. 6.

S METER

This circuit has an advantage over many others in that it is impossible to pin the meter once the pots. have been set.

For any other receivers, select a valve which will have a cut-off voltage equal to the a.g.c. voltage of that developed by that rock-crushing signal in the next block. With the valve out of the socket, set the 3K pot. for full scale deflection, then replace the pot. with a fixed resistor of equal value. Replace

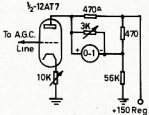


FIG. 6. "S" METER CIRCUIT.

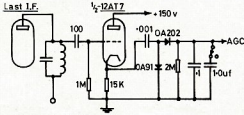


FIG. 5. A.G.C. CIRCUIT.

Note: The OA202 is shown incorrectly. It should have been drawn in the reverse direction.

tick. In writing this I have tried to keep it as simple as possible, and each section separate, so that if any of the ideas appeal, they may encourage someone else to grab a soldering iron and get into it. I am sure you will have quite a lot of fun and the end result will be very pleasing.



PROVISIONAL SUNSPOT NUMBERS FOR APRIL 1967

Dependent on observations at Zurich Observatory and its stations in Locarno and Arosa.

Day	R	Day	R
1	105	16	32
2	79	17	42
3	34	18	58
4	32	19	56
5	62	20	44
6	63	21	60
7	79	22	70
8	104	23	94
9	67	24	74
10	62	25	76
11	62	26	66
12	51	27	55
13	63	28	76
14	48	29	79
15	51	30	66

Mean equals 65.3.

Smoothed Mean for October 1966: 68.8.

Predictions of the smoothed monthly sunspot numbers for the coming six months:—

May 84, June 87, July 91, August 94, September 98, October 101.

M. Waldmeier, Eidg. Sternwarte Zurich, Switzerland.

SIDE BAND

Sub-Editor: PHIL WILLIAMS, VK3NN, 37 Winna Rd., Coromandel Valley, 5051

SIDEBAND FOR CONTEST

This year the R.D. Contest has come and gone, and it can be said quite safely that the sidebanders dominated the Contest. In previous years the really high scorers used high power on a.m. and "plonked" their carriers on whatever they wished to work, or alternatively just sat with a monumental signal and waited for all and sundry to call in and be worked.

1967 appears to have been the year of the transceivers, and there is no doubt they were effective in getting high scores in a short time. Those of us who are not young still need our sleep and enjoy meals in the dining room, even during Contests. I will not cross swords with the c.w. Contest men, as c.w. is quite obviously the most effective DX Contest medium, especially if you are DX.

"HOW CAN I GET ON SIDEBAND?"

Since the R.D. Contest I have been approached by all and sundry with the question "How can I get on sideband?" There are several questions which must be asked of the enquirer, such as "Do you wish to build or buy? What have you built in the past? How much can you spend?"

Those who wish to buy are usually told to visit the shack of some acquaintance, ask questions, operate the gear and then read all the equipment reviews to see which gear will provide all the necessary features they need. An example of this is "I won't have vox at any price, but I must be able to get a 500 cycle bandpass filter for c.w. contest work—so whom do you know with such equipment that I can see, and will assure me that 500 cycles is not too narrow as I'm not really sure." Customers such as this are usually easy to satisfy (with advice, at any rate).

WHICH EXCITER TO BUILD?

And now for the builders—they want to get on sideband using the junk box wherever possible, for which I don't blame them. I usually advise them to try the 9 megacycle phasing generator plus 5.0 to 5.5 megacycle v.f.o., with the possibility of adding crystal oscillators for bands other than 20 and 80 metres. This is a well tried recipe, and if you wish, later you can spend 30 to 40 dollars on a crystal filter—brand of your choice. There are numerous designs published but a well tried one is described in the A.E.R.L.'s Single Sideband Handbooks. The fourth edition has one on p. 71 by John Isaacs, W6PZV. It uses the American McCoy filter with upper and lower sideband carrier crystals. There are others, of course, but these 3 kc. wide filters give very good quality sideband signals.

In the same Handbook is the well known "Sideband Package" design by W6TEU, first described as long ago as 1958 in June "QST". This uses a crystal filter on 455 Kc. or thereabouts, using the surplus FT241 crystals. These are not as plentiful as they were 10 years ago, and remaining stocks have been well sifted through for goodies and many doubtless are now being sold. The price of mechanical filters has recently been reduced, so I recommend one be substituted for the crystal filter in the "Package". This could save hours of fiddling with surplus crystals. I have a personal dislike of mechanical filters and the sort of voice quality they produce, but this does not mean that they will not produce an effective signal with the other sideband well suppressed. One mistake people usually make is to place the carrier too high up the skirt of the filter. For the normal voice (male) and a 2.1 kc. wide mechanical filter, the carrier crystal should be set so that the "audio" for the flat-topped passband is from about 500 cycles to 2600 cycles per second.

Again, it is possible to adapt the "Package" design to use a phasing type generator at 2250 kc. This may be done as shown on page 80 of the Sideband Handbook by K4EUE, and page 87 by K9YHT.

If you have ever built an Amateur band receiver, with its mixers, r.f. stages, i.f.s and oscillators (h.f. and b.f.), then you should have no difficulty with any of the above designs. As with the receiver, where the high i.f. will give less problems with images, the exciter generating the sideband at a high frequency of say 5.5 or 9.0 megacycles, will be simple to construct and align. When you use 455 kc. you need to go to double or even triple conversion to get to the desired band and so a few double-tuned circuits will be needed along the way to get rid of unwanted images of the generated signal.

The same rules generally apply to the selection of oscillator frequencies. The levels of the oscillators for mixing s.s.b. signals are usually about 10 times as high as the sideband, so that more care is needed to ensure that their levels are not any greater than essential, and their harmonics do not fall too close to the required output band. Remember the old Irish rule that no harmonic less than the fifth should fall within 20% of the final output frequency. If they do, then you need to "trap" them out, or go to bandpass circuits—and this is enough to scare anybody off.

It will be noted that all of the exciters described use the trusty old 6146s, either one or two in the final stage. These tubes are generally easier to get

going than the t.v. line output tubes such as the 6DQ5. The 6146 is better screened internally and gives less distortion products. With fixed screen voltage of about 210 and 700-800 volts on the plate, about 45 volts of bias is needed to hold the quiescent plate current to about 25 mA. per tube. I have found the 6146 almost indestructible in this service. Should your experience with 6146s in class C with grid leak bias have been as disastrous as mine (globules of molten grids inside the tube), then take fresh heart, because once neutralised they are tame to tune, but very hot performers.

If you build a phasing version, don't forget to study that classical article in the same Handbook, originally written for November 1956 "QST" by Bob Ehrlich, W2NJR (then W0JSM), "How to adjust phasing type s.s.b. exciters". It is still as applicable now as when it was written.

When tackling s.s.b. construction for the first time, allow yourself plenty of room on a large chassis and build in the shielding early in the project. I suggest you re-read page 15 of September 1965 "Amateur Radio" for tips on laying out the exciter chassis.

SEVERAL COMMON QUESTIONS

The first evergreen question is: "Well, I have operated c.w. for over 40 years but I'm 'danged' if I can get the hang of those pi-network things. Can I stick to link coupling in the s.s.b. final?"

The answer is that it is possible to use link coupling, especially if you are prepared to stick to plug-in coils and variable links so that the loading on the final can be adjusted for optimum. But in these days of shielded finals (to reduce t.v.i. and r.i.) and rapid band switching, the pi-network gives a better means of band changing with one tapped coil and a large broadcast three-gang condenser for a loading control.

But don't expect too much impedance matching range with a simple switched coil. They are usually designed for a nominal 50 or 70 ohms output impedance—all boxed up, and an aerial matching and tuning box is used to bring the aerial back to an impedance of this value.

The second harmonic of an 80 metre s.s.b. signal on 40 metres (or just outside of 40 metres) sounds awful, so if you use the pi-network for convenience, then use an aerial tuner to present the correct load to your final—and reduce your harmonic output at the same time.

And the second question concerns peak ratings of final amplifier tubes and went like this:—

"I had a Heathkit DX100 with a pair of 6146s which took about 140 watts input unmodulated in class C, and on modulation this was 560 watts peak input power. Why can't I run the same peak input on sideband?"

Now, you wouldn't operate these tubes at such ratings in a modulator, would you? Just imagine a class C modulator—no I can't, because it would sound terrible, but class B should be better. Looking at the class AB1 and AB2 ratings in the Handbook shows that AB1 gives 120 watts output and AB2 132 watts (peak) output, the latter

(Continued on Page 17)

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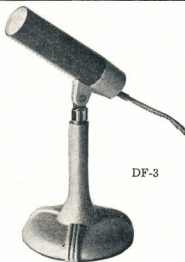
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OF JAMBOREES AND CUBS AND US . . .

A. J. C. THOMPSON,* VK4AT

WHAT a headache to co-ordinate and launch such a scheme! Yet we see more co-operative effort being put into it each year. In VK4 land, at this particular QTH, the two Amateur Radio stations to be used arrive complete with aerials, gear and rostered operators. They set up in opposite ends of this huge solid timbered Scout-hut and test their gear simultaneously on different bands.

Along comes the Great Day, the Scouts, the Radio Gang and QRM. One transmitter tries to outcrash the QRM on 40 metres while the other finds the long distance 20 metre band to its liking. New Zealand responds and after a few reciprocating exchanges and sundry adjustments the meters suddenly come good and we are off to a good start.

The s.w.r. meter in the aerial circuit registers a tale of woe, so Barrie looks at his 72 ohm coax, with a critical eye and decides on 300 ohms. He mentally pictures the probable activities of his household, then estimates the chances of successfully swiping a hunk off their t.v. 300-ohm lead-in.

No. 2 operator, placidly waiting for detailed instruction on how to handle this (to him) strange rig, is suddenly bundled into the operator's chair, shown the off-on switch, told to turn that knob for gain and chase him with that dial if he moves off frequency. The ZL is loud and clear so the greetings of the Scouts in their queer jargon is banded back and forth. A brisk bargaining on the exchange of badges ensues and then we are off with him and on to Adelaide. Barrie returns in a cloud of dust but with no visible sign of pursuit. He heaves the purloined 300-ohm lead-in through the window and takes over.

The transmitter "loads-up" and all is well. Tension is off for the relieving operators and a quick cup of tea indicated, but they have with them that nagging thought: Now why should a purloined lead-in have jagged ends when the swiper thereof had a perfectly good pair of side cutters in his pocket? It could quite reasonably be assumed that Barrie's "good deed of the day" was to be postponed until tomorrow. His grateful family would then appreciate the quick fixing of the t.v. that had so suddenly gone on the blink. But back to work with a background of rattling cups, voices and the harsh blare of the other transmitter valiantly striving on 40 metres.

Yallourn in VK3 land is soon busy, bragging about their big hole in the ground and how you can stand on the top and see ant-like movements way down at the bottom. We know the answer to that one. They are ants! Not to be outdone and put to shame when the tall ones are being put over, we have a word with our Scouts and

out goes the tale of the shoppers at the one-mile in the old days who, on very wet days, could go down one mine and come out of another mine almost on the main street. Adelaide seems to be popular. Some sort of a corroboree due to be held there soon, we gather, when the Scouts speak some English.

So here is Adelaide and a heterodyne. Comes a request to shift up 5 Kc. Now how far is 5 Kc. on a strange rig? We give that one up and tell him to go up and call us from there. We have a stab at 5 Kc., gently rocking the dial in wider and wider sweeps then shoot right up the band. We locate his familiar voice just putting it over to us about three times as far up as we expected. Either this rig has a super bandspread or else he just kept going until he found a clear spot to his liking.

We compare his six Scouts with our 20, then discover our 20 are now 40. Now, shall we put them through like sheep at shearing time or trust to his being generous and having a long session? We tell him we have droves of Cubs and Brownies, then call in the eager ones to speak their piece while we cast an appraising eye over their leader. Will she give them confidence by speaking or do they give her confidence? She looks efficient and confident so in she comes and all is well.

Those expectant little faces are not all to be satisfied, even though we coax and cajole the more timid. There are going to be some tears shed over this by the less fortunate and those that we miss. Things are quiet for awhile as a VK2 comes in, but he has only Girl Guides. Our Scouts are not shy and ask for an exchange of badges. A pause and then "they haven't any". We are shocked! How have they acquired the "brush-off" technique at such an early age? A little thought, then we visualise anxious mothers in the background shepherding their chicks. We warn our Scouts not to use slang and make a note on the pad to "bung on" the charm during the next over.

The speaker drones on and we have time to ponder over the symmetrical attractiveness of these Brownies and Girl Guides in their uniforms, without any eye-catching colors. Like the Scouts themselves, their neat appearance must have been evolved by trial and error over many years. Here we have healthy tradition in the making with a whole cross-section of our youth-

ful community taking no part in either wanton destruction or the cult of ugliness. It makes us wonder if the so called leaders of youth have very willing followers.

But back to work as the speaker suddenly cuts out. A flick of the dial and a glance at the meter puts the trouble at the other end. Probably nervous little fingers have pushed the mike switch over. Back he comes with a rush to murmur 73 to us all and he is off.

It is CQ for us now in the hope of DX, but the answer comes from Narandera. We puzzle over a town in Victoria having a 2 call sign, but when he says he is about half-way between Melbourne and Sydney we decide it must be on the border. Some of our small fry at the back insist on it being in the Riverina but we ignore them. We make a note on the pad to bring an atlas next time. It would help on this job if the operator was a school teacher and a trained detective with a couple of years spent on psychology and a few months in a charm school.

And thinking of detectives reminds us of Barrie and that severed lead-in. He must have had some doubts about his family waiting for him to fix that t.v. In that case the local t.v. trouble-shooter might even now be trying to join two jagged ends that dangle 20 feet apart. After sundry tuggings he would have to give visual proof to a very sceptical family that such a state existed. His troubles wouldn't end there either. He would be expected to explain how it went and where it is now.

But we have our own troubles, too. We just took a little peek up the band a bit, confident that the transmitter was sitting on the frequency. When too late we remembered that in these silly transceivers the transmitter follows the receiver around like a faithful pup. Now we have lost our station and can't find it. All of our observant off-siders know just where we were sitting so we soon are back on the frequency with the loss of much dignity.

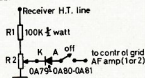
More trouble now, this time from a Victorian. We never even heard of his town but on enquiring we learn that he comes from the Glenrowan district. Wow we do know our history even if we are a bit weak on geography. We ask if he is the son of Ned Kelly. He is indignant! He says he is not the son, he is the father. A heated argument flares up at this end. Did he mean that he was the father of Ned Kelly's son or just the father of Ned Kelly? Now we Queenslanders can hold our own when the talk is of big holes in the ground, but when the bragging is about their famous relatives, then we must admit to being properly licked. We hand over to our successors after warning them to beware of these Victorians. They can put it all over us when it comes to telling tall yarns.



* Skyrings Creek, Pomona, Qld.

A SIMPLE AND EFFECTIVE NOISE LIMITER

The following circuit was found to be a simple and effective noise limiter. The circuit itself is simple and only requires a few components and is easily incorporated into most existing receivers.



The circuit is actually only a gated clipper, by varying the positive voltage on the cathode of a diode we control the voltage at which the diode will conduct (minimum voltage at which the diode is gated on), thereby limiting the maximum positive voltage swing on the anode.

The values used in the circuit were selected from the junk box and can be varied to suit the builder, but R1 should be kept a high value to (a) limit the current through the pot, thereby limiting the power dissipated in it, and (b) as the voltage on the grid is only small, we only require a maximum voltage of about 10-20 across the pot.

With the values shown in the circuit and a h.t. of 200 volts, the current flowing through the circuit is only 1.8 mA. (approx.). This means the voltage across the pot. is about 19 volts, this

value gave ample control over the diode, also this meant the power dissipated in the pot. was well within its tolerance (much less than 1 watt). The pot. has a switch (s.p.s.t.) so that the limiter can be switched in and out.

The semiconductor diode used was a normal small signal diode of the germanium type.

The circuit was tested in several receivers and worked effectively in all of them and made unreadable signals readable without attenuating the required signal greatly.

—Jim Jones, VK2ZEZ (ex VK3ZEW)

MODIFIED "Q" MULTIPLIER IN HE80 RECEIVER

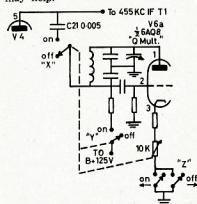
As originally wired, switches X and Y (see diagram) are as indicated and switch assembly Z does not exist, i.e. the 10K potentiometer is connected direct to earth at its bottom end. When the X and Y ganged switches are closed to connect the "Q" multiplier, the whole of the "Q" multiplier is placed in parallel across the primary of 455 Kc. i.f. transformer T1. This detunes this i.f. to the extent that the gain which the "Q" multiplier will supply is all "used up" in making up for the loss caused by the detuning of T1.

So, simply disconnect X and Y from their present positions and bridge these connections permanently. Rewire X and Y into the circuit shown between the 10K pot. and earth as at Z. Realign the i.f. transformer T1. There

should be sufficient slug adjustment available.

(Note that in the HE80 receiver this modification is not successful because the i.f. cannot be peaked after the modification.)

If difficulty is experienced in aligning the i.f. of the HE80 a reduction in the value of C21 by a small amount may help.



This modification gives up to 5 S points gain in signal strength when the "Q" multiplier is "on" as compared to its "on" position previously. The increase in "Q" is still quite effective. Try it and see. There are no new components required, just a little soldering and wire.

Paul Rodukoff, WIA-L4017

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ALEX OUTTRIM will take care of your needs during my absence overseas and continue to keep stocks of the following equipment:

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- ★ GONSET Sidewinder 2 metre SSB/AM Transceivers. \$400.
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- ★ HEATH HA14 all-band 10-80 metre Linear Amplifier and AC Supply Kits. \$225.
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- ★ CDR heavy duty Ham-M Rotators. \$180.
- ★ NEWTRONICS 4-BTV 10-80 metre all-band self-supporting, Base Station Verticals. \$70.
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Also, perfect used Galaxy III. 20/40/80 Metre Transceivers. \$275.

Hope to be back early 1968 with lots of new ideas and goodies from America, the U.K., the Continent and JAPAN . . . ARIE BLES

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ROSS HULL MEMORIAL VHF/UHF CONTEST, 1967-8

The Federal Contest Committee of the Wireless Institute of Australia invites all Australian and Overseas Amateurs and Short Wave Listeners to participate in this annual Contest which is held to perpetuate the memory of Ross Hull whose interest in v.h.f./u.h.f. did much to advance the art.

A Perpetual Trophy is awarded annually for competition between members of the W.I.A. in Australia and its Territories, inscribed with the name and life work of the man whom it honours. The name of the winning member of the W.I.A. each year is also inscribed on the Trophy. In addition, this member will receive a suitably inscribed certificate.

OBJECTS

Australian Amateurs will endeavour to contact as many other Amateurs in Australia and Overseas under the following conditions.

DATE OF CONTEST

From 0001 hours, E.A.T., 9th December, 1967, to 2359 hours E.A.T., 14th January, 1968.

DURATION

Any seven calendar days within the dates mentioned above, not necessarily consecutive. These periods are to be at the operator's convenience. A calendar day is from 0001 hours E.A.T. to 2359 hours E.A.T.

RULES

1. There are two divisions, one of 48 hours duration, and one for seven days. In the seven-day division, there are three sections:—

- Transmitting, Open.
- Transmitting, Phone.
- Receiving, Open.

2. All Australian and Overseas Amateurs may enter for the Contest whether their stations are fixed, portable or mobile.

3. All Amateur v.h.f./u.h.f. bands may be used, but no cross-band operating is permitted. Operators are cautioned against operating transmitting equipment on more than one frequency at a time, particularly when passing cyphers. Cross-band operation to assist contest working is prohibited.

Such operation will be grounds for disqualification. Cross mode contacts will be permitted.

4. Amateurs may enter for any of the transmitting sections. The seven-day winner is not eligible for the 48-hour award.

5. Only one contact per band per station is allowed each calendar day.

6. Only one licensed Amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a contestant and must submit a separate log under his own call sign.

7. Entrants must operate within the terms of their licences.

8. **Cyphers:** Before points may be claimed for a contact, serial numbers must be exchanged. The serial numbers of five or six figures will be made up of the RS (telemetry) or RST (c.w.) report plus three figures, commencing in the range 001 to 999, for the first contact, and will then increase in value by one for each successive contact. When a contestant reaches 999 he will then commence again with 001.

9. **Entries must** be set out as shown in the example, using only one side of the paper. Entries must be post-marked not later than 12th February, 1968, and clearly marked "Ross Hull Contest" and addressed to Federal Contest Manager, Box N1002, G.P.O., Perth, W.A., 6001.

10. **Scoring** for all sections will be based on the attached table. Distances must be shown in the log entry as shown in the example. Failure to make this entry will invalidate the particular claim. Some typical distances are given in the attached table.

11. **Logs:** All logs shall be set out as in the example and in addition will carry a summary sheet showing the following information:

Name Call Sign
Address Division
..... Claimed Score

SCORING TABLE

Distance in Miles	52 Mc.	144 Mc.	432 Mc.	578 Mc.	Higher
Up to 25 Miles	1	1	2	2	20
26 to 50 "	1	1	1	10	10
51 to 100 "	2	5	25	30	100
101 to 200 "	5	10	50	60	200
201 to 300 "	15	15	75	85	250
301 to 500 "	10	20	100	125	300
501 to 1050 "	5	25	200	200	350
1051 to 1500 "	10	50	250	250	400
1501 to 2500 "	20	100	300	300	450
2501 to 3500 "	35	200	400	400	500
3501 to 5000 "	50	300	450	450	550
5001 and over	100	400	500	500	600

Operating Dates (7 cal. days)
Highest Score over a 48-hour period was points.

Operating period: from hrs. E.A.T. /6.....
to hrs. E.A.T. /6.....

Declaration: I hereby certify that I have operated in accordance with the conditions of my licence and abided by the Rules of the Contest.

Signed
Date
12. Entrants not abiding by the Rules of this Contest will be disqualified.

13. The ruling of the Federal Contest Committee of the W.I.A. will be final. No dispute will be entered into.

14. **Awards:** Certificates will be awarded to the winners of each section in each VK and Overseas Call Area. The VK contestant who returns the highest score in the transmitting section and who is a financial member of the W.I.A., will have his name inscribed on the Trophy which will be held by his Division for the prescribed period. A Certificate will be awarded to the contestant who shall not be the Trophy winner, and who returns the highest scoring log covering a period of any 48 consecutive hours.

Also, Certificates will be awarded for operating in the Ross Hull Contest and breaking any Australian v.h.f./u.h.f. distance record.

RECEIVING SECTION

1. Short Wave Listeners in Australia and Overseas may enter for the Contest, but no transmitting station may enter.

2. Contest times and logging of stations on each band are as for the transmitting sections, however there is no 48 hour sub-section.

3. To count for points, logs will take the same form as for transmitting sections, but will omit the serial number received. Logs must show the call sign of the station heard (not the station worked), the serial number sent by it, and the call sign of the station being worked.

Scoring will be on the same basis as for transmitting stations, i.e. on the distance between the Listener's station and the station heard. See the examples given. It is not sufficient to log a station calling CQ.

4. A station heard may be logged only once per calendar day on each band for scoring purposes.

5. **Awards:** Certificates will be awarded to the highest scorer in VK and Overseas countries.

EXAMPLE OF TRANSMITTING LOG (Brisbane Station)

Date/Time E.A.T.	Band Mc.	Emission	Call Sign	RST/No. Sent	RST/No. Rcvd.	Dist. Miles	Points Claimed
24th Jan. 0100 E.A.T.	52	A3(a)	VK7ZAI	59001	59004	1110	10
0110 E.A.T.	52	A3(a)	VK4NG	58002	57051	330	10
0230 E.A.T.	144	A3	VK5ZK	58003	58043	990	25
0235 E.A.T.	144	A3	VK3ZJO	45004	49021	850	25

EXAMPLE OF RECEIVING LOG (Perth S.w.I.)

Date/Time E.A.T.	Band Mc.	Call Heard	RST/No. Sent	Station Called	Dist. Miles	Points Claimed
2nd Jan. 1000 E.A.T.	52	VK5ZDX	59221	VK8KK	1330	10
1025 E.A.T.	52	VK2ZCF	58195	VK6ZAA	2040	20
1110 E.A.T.	432	VK6ZDG/6	57061	VK8LK/6	60	25
3rd Jan. 0500 E.A.T.	144	VK5ZHU	44102	VK6ZCN	1330	50

1967 R.D. Broadcast by Hon. Allen Fairhall, M.P., Minister for Defence



IN countless radio shacks in Australia today, there is a ring around the calendar. For today is Remembrance Day.

May I begin by recalling one little remembered fact. It is that, in the years before World War II, there operated in Australia a Royal Australian Air Force Amateur Radio Reserve. On the declaration of war in September 1939, the first additions to the manpower strength of the Australian fighting forces came from this group of Radio Amateurs. They were to be the first of a long line of Amateurs who gave their services to their country at war.

Some of them even gave their lives. And in Australia we recall their sacrifice in this Annual Remembrance Day Amateur Contest.

Since Amateur Radio contacts make friendships, and develop international understanding, and because in this field lies the greatest possibility for the future of avoiding war, it seems to me that today's Remembrance Day activity and the promotion of contacts between fellow Australians is a fitting way of serving the memory of those Australian Amateurs whose names appear on the Roll of Honour.

And yet their service in the field was not the only service that Amateur Radio operators rendered to Australia at war.

The fact is that World War II gave birth to much of the electronic technology which now runs our world. In a country which had not previously been deeply involved in the electronic industry, but found itself in wartime need, it was the home-grown skill and experience of Radio Amateurs that largely filled the key roles in laboratories and factories, developing and building the equipment which their fellow Amateurs operated in the field.

Perhaps nothing gives me more pleasure than this opportunity officially to acknowledge, even if belatedly, the magnificent contribution to this country's defence which came from Amateur Radio operators.

It has been my pleasure to be associated with you, officially through Defence and defence production, but even more happily as an active member of the fraternity and if, today, I hold a position of some authority in the Government, it is because my interest in Amateur Radio set me on the high road to that office. But it does permit me to say that the health and growth of Amateur Radio as an advanced technical activity, is of the very greatest value, not only to defence, but to national development, when electronics means so much.

● This is the full text of a special message broadcast throughout Australia on 12th August, 1967, on the Amateur Bands by the Minister for Defence (Mr. Allen Fairhall) on the occasion of the 1967 Remembrance Day Contest conducted annually by the Wireless Institute of Australia.

Mr. Fairhall is a Life Member of the Wireless Institute of Australia and a pioneer of the commercial and amateur broadcasting networks in Australia. Mr. Fairhall operates from Newcastle, N.S.W., on the Amateur call sign of VK2KB.

In France, the government of today operates what might be termed a "national radio school," recruiting to it thousands of technically-minded young men, giving them instruction, supplying them with components for practical instruction, then judging their work. All of this, the promoters say, is to make sure that the electronics industry of that country is not starved of the technical talent it needs.

This is how one modern technologically advanced country values electronic technicians. It could be an example to everyone.

But if we do not have that kind of school, the Amateur Radio could well be a powerful alternative, richly deserving of government encouragement in all of those avenues where government alone can help. Not least of these is in the preservation of Amateur frequency assignments.

It is true to say that this is the electronic age. But if anybody should be so foolish to regard that as merely another cliché, they need only cast their thoughts over today's activities in travel and transport, in research, design and production, in management, communications and in entertainment. The great common denominator for all of these daily activities is the practical application of electronics.

And to all of this, through his own efforts, the Radio Amateur has an open door. For Amateur Radio is a unique preoccupation. I can't call it a hobby, because it is vastly more than that.

To the technician, amateur or professional, Amateur Radio offers an avenue of scientific study where he can learn by doing. To the more advanced scientist, it offers opportunity to experiment within his resources and to discuss the results of his work with others of like mind.

To others concerned with the philosophical value of human communications, the Radio Amateur has, in most cases, found the answer, not merely through the exchange of signals but in that peculiar and valuable ability to exchange thoughts and ideas with contemporaries in a hundred nations who make up the great democracy of Amateur Radio.

If there were nothing more than that in Amateur Radio it would be enough.

A recent study by the Stanford Research Institute discloses that of the 275,000 Amateur Radio operators in the United States of America, no less than 110,000 of them are associated professionally in some phase of the nation's communications and electronics industry. Of these at least 94,000 attribute their choice of a career to their experience as Radio Amateurs.

Who can say how much of the technological leadership of the United States today is attributable to the Radio Amateur. And again, who can say, here in our own country, industrial growth through electronics has not been vastly enriched by the knowledge and experience of those who have chosen Amateur Radio as a recreational extension of their professional work.

There is something tremendously unique about a recreational activity that acknowledges the active participation of half a dozen heads of state throughout the world, that numbers amongst its adherents the originators and leaders of some of the world's greatest industries, that brings together in a great confraternity of enthusiasts the research scientists of defence and industry, and yet enlists into that same fraternity on equal terms the thousands who see in Amateur Radio a challenge to learning and an opportunity for friendship.

Here is an arena where an operator's telegraphic key or microphone is a passport to instant friendship, where a call will bring—hopefully—an instant reply from a fellow in some distant corner of the world who is immediately your friend "Joe" or "Roberto", Francisco, Pierre or Toshahide, whose name and conversation you will recall when next you meet.

In the whole radio frequency spectrum, there are preserved only narrow Amateur bands, safe we hope from commercialism, but free for the peoples of the world to talk to each other in mutual interest and friendship. Kilocycles for kilocycles, there is no piece of the spectrum that contributes so much to the warmth of international understanding or to the exchange of information as do the Amateur bands.

It may be that the days when Amateur operators contributed to the development of new techniques and invention have been overtaken by the enormous growth of technology to which their early efforts made such magnificent contribution. Today, real discovery has moved into the well and expensively equipped laboratories. But the Radio Amateur has a unique opportunity to apply technology, to test theory, and enjoy the doing of it, for surely Amateur Radio is the most rewarding and satisfying of technical activities.

So that, in the Contest which is about to begin, we will remember not only our fellow Amateurs who served their country in war, but those who enrich their experience and devote their talents to a young Australia on the way to industrial greatness.

It is my pleasure to declare this 1967 Remembrance Day Contest now open.

TEST EQUIPMENT

S.W.R. METERS

KYORITSU Model K-109 Standing Wave Ratio Bridge, 1:1 to 1:10 a.w.r., Impedance 50 and 75 ohms. Frequency range 1.5 to 60 Mc. Includes 0-100 d.c. microammeter. \$20.

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Ranges: D.C. Volts 0-0.3, 1, 10, 50, 250, 500, 1,000 and 5,000 volts (25K o.p.v.). A.C. Volts 0 to 10, 50, 250, and 1,000 volts (5K o.p.v.). D.C. Current 0 to 0.03, 1, 50 and 500 mA. Inductance: 0 to 5,000 Henries. Capacitance: 250 pF to 0.02 μ F. Resistance: 0 to 5K, 500K, 5 Meg, and 50 Meg. Ohms. Decibels: minus 20 to plus 22, plus 20 to plus 36 db. (Reference 0 db. equals 0.775 volts equals 1 mW. across 600 ohms).

Price \$20.00



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A.C. Volts: Sine wave: 0.1v.-1,500v., 7 ranges. Peak-to-peak: 0.4,000v., 7 ranges. Output (db. m): minus 20 db. to plus 65 db.

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The K-142 Vacuum Tube Volt Meter uses a P-50 d.c. 200 microammeter and operates from 240 volts 50/60 cycle a.c. mains. Large clearly calibrated meter gives ease of reading.

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240v. a.c. operation. Printed circuit board wiring. 5 c.p.s. to 1 Mc., time base oscillator to sweep 10 c.p.s. to 100K c.p.s. in steps with continuous in-between variation. Ideal a.s.b. measurement with coupled r.f. sampling signal. Weight 11 lb.

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Highly sensitive, transistorized Grid Dip Oscillator covering range of 350 Kc. to 220 Mc. Eight color-coded plug-in coils supplied with each instrument. Meter sensitivity 500 d.c. microamps.

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Pocket size instrument finds defective circuits—IMMEDIATELY!

For every technician or engineer who must find defective circuits quickly and exactly, the new Mosquito with detachable probe—pocket size, cordless, pen-type instrument which generates and injects a rich signal covering the audio, i.f. and r.f. spectrum!

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Ratio 7.5:1. Calibrated 0 to 200 (red scale) over 180 degrees. Six blank scales for band/frequency calibration. Size 6 1/2 x 3 1/4 in. Complete with hairline cursor and black moulded escutcheon and perspex clear front.

Price \$8.75

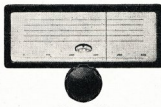
SLOW MOTION DRIVES

Ideal for use where 1:1 control is impractical.

Eddystone Type 892 (as used with Type 990 dial). Epicyclic ball bearing drive mechanism. Ratio 12:1. Smooth, back-lash-free operation. Price \$3.45.

Jabel Type 3 6:1 planetary drive. Good quality construction at a reasonable price. \$3.75.

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A high grade assembly designed for instrument application. The movement is gear-driven and fly-wheel loaded, giving a smooth, positive drive, with a reduction ratio of 10 to 1. The pointer has a horizontal travel of 7 inches. A circular vernier scale, marked over 100 divisions, rotates five times for one traverse of the pointer, and, read with the "100" scale on the dial, provides a total of 500 divisions.

Price \$21.75



Cat. No. 558

FULL VISION DIAL

The epicyclic, ball-bearing drive mechanism is of improved design and has a reduction ratio of approximately 10 to 1. The movement is smooth and free from backlash. The dial escutcheon measures 6 in. long by 4 1/4 in. wide plus a 3/64 in. lip. The scale is marked 0-100 over 180 degrees and is 5 in. across. A large fluted instrument knob is fitted, ripple black finish. Ideal for s.s.b. equipment.

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V.S.W.R.: Less than 1.15:1 from 0 to 500 Mc. (50 ohm load).

Isolation: Greater than 60 db. at 10 Mc. in DK60 and DK60-2C; greater than 100 db. from 0 to 500 Mc. in DK60-G and DK60-G2C when in energised position.

Operating Time: Less than 30 milliseconds from application of coil voltage; less than 15 milliseconds between contacts.

Connections: Standard SO239 type v.h.f./u.h.f. Co-ax. Connectors. Available with Type N, BNC, TNC, C Connectors to order.

Type DK60 standard single-pole change-over ... D.C. A.C. \$18.12 \$19.25

Type DK60-G standard single-pole change-over with special isolation contact in de-energised position to reduce cross-talk ... \$20.15 \$21.15

Type DK60-2C same as DK60 but includes external set of double-pole change-over contacts ... \$20.25 \$21.35

Type DK60-G2C, same as DK60-G, but with external double-pole change-over contacts ... \$21.78 \$23.30

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Belling & Lee L734P Co-ax. Cable Plug ... 32c

" " L60MS Co-ax. Chassis-Socket ... 28c

" " L60J3 Co-ax. Chassis-Socket ground insulated ... 25c

" " L734/S Recessed Co-ax. Chassis Socket ... 25c

" " L734/J Co-ax. Cable Socket ... 43c

" " L121 Bulk-Head Cable Socket ... 56c

" " L616 Coupling—couple two L734P Plugs ... 36c

PT81M (UR67) 52 ohm Co-axial Cable, per yard ... 58c

RC88AU 50 ohm Co-axial Cable, per yd. ... 35c

PT8M 55 ohm Co-axial Cable ... per yd. 35c

PT77M 70 ohm (UR70) Co-ax. Cable, yd. ... 40c

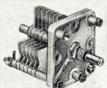
PT11M 70 ohm Co-axial Cable ... per yd. 40c

FORMULA 11 Open Wire 300 Ohm Transmission Line, 100 ft. coils ... \$5.06

K20 72 ohm Twin Flat Line ... yd. 15c

KA47 300 ohm Twin Flat Line (solid or slotted) ... yd. 8c

KA45 300 ohm Heavy Duty Flat Line (solid or slotted) ... yd. 12c



EDDYSTONE CONDENSERS

476 Split Stator 15 x 15 pF. ... \$2.30
580 Single Section 13.5 pF. ... \$1.35
583 Split Stator 23 x 23 pF. ... \$2.50
544 Butterfly 32 x 32 pF. ... \$3.25
552 Single Section 91 pF. ... \$2.90
559 Single Section 140 pF. ... \$3.00
587 Butterfly 16 x 16 pF. ... \$3.90
588 Single Section 27.5 pF. ... \$2.90
589 Single Section 66 pF. ... \$2.90
739 Butterfly 10 x 10 pF. ... \$3.25
738 Double Bearing 10 pF. ... \$5.27
817 Transmuting Type S. Section 270 pF. \$5.15



VALVE SOCKETS

TELETRON
BAKELITE
MOULDED
AND
MICA
MOULDED
VALVE
SOCKETS
SKIRTED
AND
UNSKIRTED

ST272 7-pin unskirted bakelite ... 10c
ST271 7-pin unskirted mica ... 13c
ST290 9-pin unskirted bakelite ... 11c
ST291 9-pin unskirted mica ... 15c
ST470 7-pin skirted bakelite ... 23c
ST471 7-pin skirted mica ... 31c
ST472 9-pin skirted bakelite ... 31c
ST473 9-pin skirted mica ... 35c
ST480 octal moulded bakelite ... 19c
ST481 octal mica filled ... 16c

CANS FOR SKIRTED SOCKETS

1-9/16 inch Can Length—CS7/1 for 7-pin 15c
CS9/1 for 9-pin 22c
1-15/16 inch Can Length—CS7/2 for 7-pin 15c
2 inch Can Length—CS9/2 for 9-pin 22c
2-3/8 inch Can Length—CS9/3 for 9-pin 22c
Ceramic 7-pin Skirted Sockets ... 30c
Ceramic 9-pin Skirted Sockets ... 35c
Ceramic Octal, 4-pin, 6-pin, 6-pin standard Valve Sockets ... \$5.10

DOW-KEY MANUAL CO-AXIAL SWITCHES

R.F. Ratings: 1 kw. to 500 Mc. Fine silver finish. Fitted with u.h.f. type SO239 co-axial sockets.
DK78-2 Single Pole two throw ... \$18.22
DK78-3 Single Pole three throw ... \$18.68
DK78-6 Single Pole six throw ... \$20.25
DK78-1 Transfer Switch ... \$19.30

TRANSISTORS AND DIODES

AC107	...	\$1.90	2N269	...	\$1.40
AC125	...	85c	2N270	...	\$1.24
AC126	...	85c	2N271	...	\$1.16
AC127	...	95c	2N280	...	\$1.54
AC127/128	...	85c	2N281	...	\$1.25
AC127/132	...	\$1.91	2N301	...	\$1.59
AC128	...	95c	2N301	...	\$1.59
2-AC128	...	\$1.01	2N301A	...	\$3.30
AC132	...	85c	2N370	...	\$1.84
2-AC132	...	\$1.72	2N371	...	\$1.84
AC172	...	\$1.00	2N372	...	\$1.84
AD139	...	\$2.10	2N373	...	\$1.43
2-AD139	...	\$2.10	2N374	...	\$1.43
AD148	...	\$2.22	2N405	...	34c
*AD149	...	\$2.25	2N408	...	84c
2-AD149	...	\$4.41	2N410	...	85c
*2-AD149	...	\$4.50	2N412	...	85c
AF108	...	\$2.00	2N413	...	50c
AF114N	...	30c	2N647	...	96c
AF115N	...	85c	2N649	...	90c
AF116N	...	85c	2N1010	...	\$1.40
AF116NS	...	85c	2N1637	...	85c
AF117N	...	85c	2N1638	...	85c
AF118	...	\$2.10	2N1639	...	35c
AF171	...	\$2.00	2N2613	...	98c
AS128	...	90c	2N2614	...	\$1.00
BC107	...	\$1.00	AA119	...	70c
BC108	...	90c	2-AA119	...	60c
BC109	...	\$1.30	AS25	...	50c
BF115	...	90c	BA100	...	44c
OC26	...	\$2.55	BA102	...	\$1.22
2-OC26	...	\$4.10	BA104	...	30c
OC30	...	\$4.00	BA122	...	50c
2-OC30	...	\$8.00	OY100	...	\$1.50
OC44N	...	85c	OA90	...	28c
AC45N	...	85c	OA91	...	29c
OC57	...	\$2.22	OA95	...	33c
OC58	...	\$2.22	OA210	...	85c
OC59	...	\$2.34	OA605	...	55c
OC60	...	\$2.40	OA610	...	60c
OC65	...	\$2.43	OA620	...	85c
OC66	...	\$1.43	OA630	...	80c
OC70	...	\$1.15	OA650	...	\$1.00
OC71N	...	\$1.24	OA660	...	\$1.22
OC72	...	\$1.25	OA670	...	\$1.40
2-OC72	...	\$2.50	OA674	...	50c
OC74N	...	85c	OA675	...	50c
2-OC74N	...	\$1.71	IN37A	...	28c
OC75N	...	\$1.24	IN817	...	29c
OC79	...	\$1.40	IN818	...	35c
OC169	...	\$1.83	IN4193	...	85c
OC170	...	\$1.83	IN4194	...	85c
OC171	...	\$1.30	IN3195	...	\$1.22
OC25N	...	\$1.71	IN3196	...	\$1.50
2N217	...	88c	IN3253	...	72c
2N217S	...	88c	IN3254	...	90c
2N218	...	90c	IN3255	...	90c
2N219	...	90c	IN3256	...	\$1.55
2N220	...	90c	IN3553	...	\$1.71
2N247	...	\$2.50			

* Supplied with mounting material.

COIL FORMERS

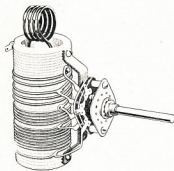
3/4 inch Poly. Formers with mounting base and iron slug ... 30c
7/16 inch Paxolin Formers with mounting base and iron slug ... 23c
3/8 inch Poly. double slugged I.F. Formers with can ... 81c
Two-pin Polymax G.D.O. Formers with winding protective shroud for inductances ... 72c

NEON LAMPS

GE Type NE51 M.B.C. 110v. Neon Lamps, 1/4 watt ... 39c
GE Type NE2 Pig-tail 110v. Neon Lamps, 1/4 watt ... 25c

PLEASE INCLUDE FREIGHT WITH ORDERS

PI-COUPLERS



WILLIS MEDIUM POWER TYPE

For use up to 600 watts p.e.p. Match plate loads of 2,000 to 3,500 ohms (Z) and higher into co-axial cable. Operating Q increases on higher frequencies to increase harmonic suppression, enabling practical values of tuning capacity to be used on 10 and 15 metres and allowing for wiring inductance (L). Incorporates extra switch section for shunting additional capacity (C) if required, or switching other circuits. Switch rated or 10 amps. at 2,000 volts with contact resistant (R) of 0.8 milli-ohms. Price \$8.85.

Geleso Pi-Coupler Type 4/111 for use with parallel 807s, 6146s, etc. 75 watts. \$3.94

Geleso Pi-Coupler Type 4/112 for use with single-ended 807, 6146, etc. 75 watts. \$3.94.

Geleso Pi-Coupler Type 4/113 for use with parallel 807s, 6146s, etc. 100 watts. \$4.37.



"WILLIS"

AIR-WOUND INDUCTANCES

Take the hard work out of Coil Winding—use "WILLIS" AIR-WOUND INDUCTANCES

No.	Di- am.	per Length	Turns	Eq.	Price
	mm.	in.	in.	W. & V.	
1-48	1/2	8	3	No. 3002	59c
1-16	1/2	16	3	No. 3003	29c
2-48	3/8	8	3	No. 3006	70c
2-16	3/8	16	3	No. 3007	70c
3-48	3/4	8	3	No. 3010	82c
3-16	3/4	16	3	No. 3011	82c
4-48	1	8	3	No. 3014	85c
4-16	1	16	3	No. 3015	85c
5-48	1 1/4	8	4	No. 3018	\$1.23
5-16	1 1/4	16	4	No. 3019	\$1.23
6-10	2	10	4	No. 3027	\$1.53

Special Antenna All-Band Tuner Inductance (equivalent to B. & W. No. 3907 7 in.)

7 in. length, 2 in. diameter, 10 turns per inch, \$2.76

References: A.R.R.L. Handbook, 1961; "QST," March 1959; "Amateur Radio," Dec. 1959.

A & R TOROID BALUNS

General Specifications: Power Rating—Types A, B, C, 200 watts or 400 watts p.e.p., provided the s.w.r. is less than 2:1. Construction—Toroidal ferrite cores, fully encapsulated with epoxy resin and silica under vacuum. Suitable for use in cold to sub-tropical areas. All except 355C and 356C are provided with antenna insulator support brackets. Balun dimensions approx. 2 in. diam. x 1 in. plus socket and lugs. Weight approx. 3 1/4 to 4 oz.

Installation: When used at the antenna centre, use at least one insulator each side of the brackets and connect antenna leads to Balun terminals with 23/0076 in. or similar flexible wire. (These leads form part of the antenna length.) Types A only: When the Balun and Co-axial Cable are not supported at the centre of the antenna, it will be necessary to tie the co-axial plug to the Balun brackets with nylon cord or wire to prevent the co-axial cable from pulling the plug from the socket.

Type 350A—Impedance ratio 1:1. 75 ohms unbalanced to 75 ohms balanced. 3 to 30 Mc. For use at centre of a dipole antenna with co-axial cable feed line or at base and with 75 ohm twin line. Co-axial connector is Belling & Lee L504/S and lug terminals. Price \$4.25.

Type 351A—Impedance ratio 1:4. 75 ohms unbalanced to 300 ohms balanced. 3 to 30 Mc. For use at centre of a folded dipole antenna with co-axial feed line or at base end with 300 ohm twin line connector and terminals as 350A. Price \$4.25.

Type 352A/BC—Details as 350A except freq. range 500 Kc. to 5 Mc., or to 30 Mc. for receiving purposes only with increased attenuation. Price \$4.25.

Type 353B—This is a type 350 with a co-axial socket SO239 (Amphenol screw type). Price \$4.92.

Type 354B—Type 351 with SO239 co-axial socket. Price \$4.92.

Type 355C—Impedance ratio 2:1:1. 52 ohms unbalanced to 25 ohms unbalanced. 3 to 30 Mc. For use at the base of a mobile whip antenna, coupled to fixed or adjustable transmitter output impedance. Lug terminals. Price \$4.92.

Type 356C—Impedance ratio 3:1:1. 78 ohms unbalanced to 25 ohms unbalanced. 3 to 30 Mc. Lug terminals. Use as 355C. Price \$3.87.

MODULATION TRANSFORMERS

BRITISH "WODEN"

Type	Audio	R.F. In.	Max. Sec.
No.	Watts	Watts	Current
10	20	60	160 mA.
UM1	30	60	120 mA.
UM2	60	120	200 mA.
UM3	120	240	250 mA.

Price
\$16.00
\$23.31
\$30.39
\$32.60

MAINS TOGGLE SWITCHES

German knife-blade type, self-wiping contact Toggle Switches:

Type APR—		
1016C single pole changeover	.....	47c
1019C as above with centre "off"	.....	50c
1011C single pole "on-off"	.....	40c
507 two pole "on-off"	.....	69c
528 two pole changeover end contacts	.....	75c
519 two pole changeover rear contacts	.....	75c
539 four pole changeover	.....	\$2.56
649/2 two pole changeover centre "off"	.....	\$1.05

PUSH BUTTON PANEL SWITCHES

Type APR—		
1212C push to break return "on"	.....	60c
1213C push to make return "off"	.....	60c
1315 single pole changeover	.....	\$1.80

GELOSO V.F.O.

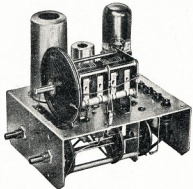


Illustration: Model 4/102

Model 4/104 V.f.o. Unit: Tunes 80, 40, 20, 15, 11 and 10 metres. Complete with calibrated dial and escutcheon. Uses 6CL6 and 5763 valves. Price (valves extra) \$24.55.

Model 4/105 V.f.o. Unit: Tunes 80, 40, 20, 15 and 10 metres. Complete with calibrated dial and escutcheon. Uses 6J5G, 6AU6 and 6L6 valves. Price (valves extra) \$24.55.

Model 4/105 V.f.o. Unit: High stability unit using output from relatively low variable frequency generator mixed with the output from a quartz-crystal generator. Low frequency generator covers range of 500 Kc. on the 80, 40, 20 and 15 metre bands and 1 Mc. on two sections of the 10 metre band. Uses 6U8, 6AH6 and 6CL6 valves. Suitable for use in a.s.b. transmitter. Price (valves and crystals extra) \$38.43.

Each model comes complete with calibrated dial, pointer and perspex escutcheon. Full circuit diagram with each kit. Valves and crystals extra.

GELOSO KIT FOR D.S.B. TRANSMITTER

The following components comprise the GELOSO Kit for construction of D.s.b. Transmitter. For circuit details refer Nov. 1965 issue of "Electronics Australia".

4/105 Crystal controlled Beat Frequency Oscillator	.....	\$28.12
N1657 Calibrated Dial, Pointer and Escutcheon	.....	\$6.30
N4/113 Pi-Coupler	.....	\$4.85
N771 Condenser	.....	\$4.50
N774 Condenser	.....	\$4.50
N17634 All Wave R.F. Choke	.....	96c

Valves not supplied with V.f.o.
Valves for V.f.o.: 6U8, 6AH6, 6CL6.

LOW PASS FILTERS

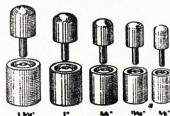
A "Cabena" Low Pass Filter will fix t.v. Cut-off frequency, 30 Mc., attenuation at 60 Mc. better than 30 db.; insertion loss, negligible. Impedance 50-72 ohms.
Price \$11.50.

RESISTORS

Cracked Carbon Resistors, 5%, 1/2w.	.....	10c
Cracked Carbon Resistors, 5%, 1w.	.....	12c

PLEASE INCLUDE FREIGHT WITH ORDERS

PUNCHES



WILLIS HAMMER TYPE PUNCHES

WILLIS hammer type die punches are made to precise sizes for use in industry wherever a clean, round hole is wanted. Designed to punch down to 14 gauge steel. Centre remnant removed with a flick of the hand. Can be used in die press. Special sizes made to order at slight additional cost.

3/8 in.	\$2.40	1-1/2 in.	\$6.00
7/16 in.	\$2.40	1-5/8 in.	\$6.40
1/2 in.	\$2.60	1-3/4 in.	\$7.20
5/8 in.	\$2.60	1-7/8 in.	\$8.00
11/16 in.	\$2.80	2 in.	\$8.40
3/4 in.	\$3.00	2-1/16 in.	\$9.60
13/16 in.	\$3.20	2-1/8 in.	\$9.00
7/8 in.	\$3.80	2-3/16 in.	\$9.40
1 in.	\$3.80	2-1/4 in.	\$9.60
1-1/16 in.	\$4.00	2-5/16 in.	\$9.60
1-1/8 in.	\$4.00	2-3/8 in.	\$10.40
1-3/16 in.	\$5.00	2-1/2 in.	\$11.00
1-1/4 in.	\$5.20	2-3/4 in.	\$12.40
1-5/16 in.	\$5.20	3 in.	\$13.40
1-3/8 in.	\$5.60	3-1/4 in.	\$15.80
1-7/16 in.	\$5.90	3-1/2 in.	\$18.20

Q-MAX CHASSIS PUNCH

SCREW TYPE

3/8 in.	\$1.68	1-7/32 in.	\$3.80
7/16 in.	\$2.00	1-1/4 in.	\$3.80
1/2 in.	\$2.00	1-5/16 in.	\$4.08
9/16 in.	\$2.00	1-3/8 in.	\$4.08
5/8 in.	\$2.00	1-1/2 in.	\$4.08
11/16 in.	\$2.56	1-5/8 in.	\$4.40
3/4 in.	\$2.56	1-3/4 in.	\$4.44
13/16 in.	\$3.08	2 in.	\$5.50
7/8 in.	\$3.08	2-3/32 in.	\$6.64
15/16 in.	\$3.58	2-1/2 in.	\$7.92
1 in.	\$3.68	1 in. sq. hole	\$5.56
1-1/16 in.	\$3.68	11/16 in. s. hole	\$5.32
1-1/8 in.	\$3.68	21/32 x 15/16	
1-3/16 in.	\$3.68	rectang. hole	\$7.62

"JABEL" TR14 REAMERS

Ideal for clean finish on small panel holes and cleaning out for neat fit.

Price \$1.05 each

"ADEL" NIBBLERS

Makes area cut-outs for transformers, etc., as simple as ABC. Price \$7.50.

PENETROX "A"

Famous American aluminium and copper corrosion inhibitor. Avoid bad electrical connections and corroded joints on beam antennae, T.V. antennae, etc. Use PENETROX "A".

Price \$1 per tube

C.R.C. FORMULA 2.26 FLUID

For use on electronic and electrical equipment of all kinds. Displaces water and moisture. Improves electrical properties. Protects metal surfaces and lubricates.

16 oz. Pressure Packs, Price \$3.00

POWER TRANSFORMERS—Voltage Doubler Types

ELECTRICAL DATA

TYPICAL PERFORMANCE—fully loaded

Type No.	H.T. Secondary Volts	Max. D.C. mA.	Heater Windings V.	Effective Series Resistance Ohms	Rect. Min. P.I.V.	Input Cap. Each uF.	Addit. Series R	D.C. O/P Volts	Price
PT 2062	115 tap 105	80	6.3 CT 2.25	25	400	100	0	290 265	\$7.60
PT 2063	135 tap 125	80	6.3 CT 2.25	29	400	100	0	340 315	\$7.99
PT 2067	120 taps 110 100	100	6.3 CT 4	22	400	100	0	310 285 260	\$9.00
PT 2064	135 tap 125	125	6.3 CT 2.25	16	400	100	0	340 315	\$10.13
PT 2965	115 tap 105	150	6.3 CT 6	10	400	100	0	290 265	\$10.40
PT 5324	124 taps 114 104	150	6.3 CT 3 6.3 CT 3	17	400	100	0	310 285 260	\$9.75
PT 2066	125 tap 105	190	6.3 CT 6	7	400	100	0	320 265	\$11.25
PT 2068	195 taps 185 175	200	6.3 4 6.3 CT 3	14	600	100	0	500 475 450	\$15.93
PT 1965	115	300	12.6 CT 5	4	400	100	5	270	\$15.85

Conventional Power Transformers also available. Prices on application.

FILTER CHOKES

Type No.	Inductance Henrys	Max. D.C. mA.	Resistance Ohms	Max. D.C. Working Volts	Type Filter	Price
3040	12	100	290	600	Cond. Input	\$3.65
3041	12	125	275	600	" "	\$5.71
3090	2.5	150	125	600	" "	\$2.35
3042	12	150	205	600	" "	\$6.85
3043	12	175	185	600	" "	\$7.60
3044	12	200	165	600	" "	\$9.28
3045	10	250	130	1000	" "	\$10.50
3046	10	300	90	1000	" "	\$13.21
3047	5-15	250-50	70	1000	Choke Input	\$10.50
3190	3 mH.	150	15		R.F. H.T. Choke for use in D.C.-D.C. Converters	85c
3191	0.15 mH.	4 Amp.	0.65		L.T. Choke for use in D.C.-D.C. Converters	56c



INSTRUMENT BOXES

These virtually water-tight die-cast boxes are made of zinc alloy material in four sizes. Each box is supplied with a close-fitting flange lid, securely held with countersunk 4 BA screws. Natural finish. These substantial boxes are invaluable for many purposes. Sizes available:—

Type 6908/P (660)	4 1/2 x 3 1/2 x 2 in.	\$2.79
Type 6827/P (845)	7 1/4 x 4 1/2 x 2 in.	\$4.50
Type 7134/P (896)	4 1/4 x 2 1/4 x 1 in.	\$1.93
Type 903	7 1/2 x 4-11/16 x 3 in.	\$4.86

TELEPHONE TYPE PLUGS

AND JACKS

Plug—shielded cover nickel plated C20-1	72c
Plug—insulated phenolic cover C20-3	60c
Plug—shielded cover chrome plated C20-5	60c
Plug—insulated phenolic cover C20-6	52c
Plug—brass P.M.G. type bakelite cover No. 150	71c
Jack sockets for above 1 1/2 inch mounting bush C20-2	32c
Jack sockets for above 3/8 inch mounting bush C20-4	32c
Plug—miniature telephone type C30-1	38c
Plug—miniature telephone Bulgin P519	50c
Plug—miniature telephone Bulgin P529	70c
Jack socket suit C30-1, P519, P529, J30	54c
Plug—compact insulated cover Bulgin P38	54c
Plug—shielded side entry Bulgin P535	86c
Plug—shielded P.M.G. type Bulgin P538	77c

PLEASE INCLUDE FREIGHT WITH ORDERS

OUR HOBBY OPENS THE DOOR TO HAPPINESS

Many times we have to listen to stories which our friends tell us and often people say that they are happy because they have a hobby. They feel inadequate because they have no hobbies, or any avenues to expand friendship. Usually this situation arises when children are brought home where the parents have no hobbies whatsoever.

Amateur Radio in any home lends an atmosphere of warmth and friendship. Hams are of the opinion that their hobby is the source of them all, and there is ample justification in saying so. What other hobby opens up friendship between all the peoples of the world?

Within minutes, people are stretching out a hand of friendship right across the globe—what other hobby will make people reach out to each other by their first name in minutes? Cheerful voices float through the air from one house to another, and one contact leads to another. In an hour, a Ham can speak to 10 or more people, or less if he or she wishes. You can travel from Hong Kong to Malaysia, Australia, Guam, Taiwan, Korea, Burma, Siam, Seychelles, or to Marion Island in an hour. Some Hams are going to bed, others preparing for breakfast, and the country is still in its hearty "good morning" is extended to that country, if it is afternoon in South Africa. If it is morning in the United States, the course of their daily routine, or go anywhere on pleasure, they can take their hobby with them. A mobile rig can be put into a car and a Ham can drive to work, and still be at sea take their equipment with them. Often Hams speak to operators in the different time zones, and they are all awake. These intrepid travelers can never say they find it hard to make friends. No sooner are they in a port than they head straight for some Ham.

If Hams prefer to operate a Morse key, then the fingers do all the work. It takes longer perhaps, but the ear hears the tone, and perception is developed. The ear becomes attuned, and during times when conditions are poor, the telegraph key succeeds where the microphone will fail. Some Hams have never owned a microphone.

Romance has resulted from friendships made over the air. One YL and an OM used to talk frequently. After a while, the OM traveled 3,000 miles apart and the weekly talks led to daily chats. Eventually they decided to meet and have a date. After a few weeks, 100 miles. Marriage resulted, and the pair settled down happily to a life of "dit-dah". In due course the telephone arrived, who no doubt will become Ham in time to come.

This hobby is a boon to people who are confined to bed, or to a wheelchair. Even blind people receive their lives around the Amateur Radio. At any time of the day, someone is waiting to share some minutes or hours with another human being. Life assumes a more joyous hue because of this hobby, which opens so many doors. Visitors are usually found to have the mutual interest.

Lasting friendships have been made over the air—sometimes one does not necessarily meet the Ham on the other side of the globe, but a daily talk is part of the routine. Some people have made over 1,000 contacts with the same person and enjoyed every moment of each chat. On occasion when a contact is made, a Ham is known to say, "spoke to you 19 or 20 years ago. It is not a case of memory always, because many Hams keep an up-to-date index card system. It certainly has the aura of warmth to chat after such a long time.

Every day, somewhere in the globe, Ham meets Ham, and in this instance, the meeting is between two of two different countries. Someone knocks on a door in Los Angeles, California, U.S.A., and when it is opened says, "I'm Mr. XYZ from South Africa." Even better, the XYZs are compared. The visitor is ushered into the house and treated like Royalty. This is referred to as an "evening" or "day" friendship. Just as kinship and often the visitor is taken all over the particular State or country, feted at a banquet, etc., before he leaves. As one door closes, another opens.

Those who are attracted to the hobby of Amateur Radio are indeed fortunate. They say, "one man's meat is another man's poison," and there are many people who share these heads and say that they would find all that talking would give them a headache. Probably that applies to them, but not to those who are even fishing. That may be self-satisfying in a way, but you can't make so many friends through these hobbies. Admittedly, groups may be formed, but the question arises, "what do you do when it rains?" Not so many doors

can be opened to you anywhere and everywhere.

In times of emergencies, Radio Hams can give tremendous help to the authorities. When communications are destroyed through water or fire, the path to speech is open—the air waves are waiting for the voice to send out distress calls, to bring helpers to the scene, food or medicines if required, etc. No other hobby can do so much for mankind in such a short period of time.

(The above was forwarded by Eric Trebilcock, and was extracted from the South African Women's Radio Club's magazine, "YL Beam.")

POSITION OF PLANETS LINKED TO SOLAR FLARE PREDICTION

BY REX FAY

Los Angeles.—Watch for major solar proton storms on May 22, 24 and 27, probably June 8, and very probably June 25, 27 and 30. Expect solar flare activity to peak at the end of 1968, with a Wolf relative sunspot number of 175 at the least, possibly reaching an intensity equal to the last maximum, which was the highest recorded.

These predictions come from calculations of the time rate of change of the gravitational field of the Sun, and the solar surface in local areas of persistent solar activity and its alignment with respect to the Earth.

Principal influences on the rate of change of the gravitational field of the solar surface are the planets. Although their gravitational effects are many orders of magnitude less than the Sun itself, the time rate of change of the resultant planetary field vector appears to have some triggering effect on the release of solar flares. It appears, therefore, that solar flares can be predicted from the positions of the planets.

UNDERSTANDING LACKING

Describing the gravitational vector technique for predicting solar flares, Dr. Richard Head, of N.A.S.A.'s Electronics Research Centre, told "Technology Today" that the technique in predictions had so far worked out very well—with an accuracy of about half a day—there was as yet no understanding of why this should be so. The technique is based on the fact that the Lunar Orbiter I operations staff of the intense proton storm occurring at the end of August 1966, at the time of the Sun's solar maximum, was a graphic mission. Because the technique relies on planetary motions, it can provide very long-term predictions.

With the success it is achieving, the gravitational vector technique is drawing increasing interest from N.A.S.A. and the academic community. Furthermore, this interest is likely to increase many fold if another speculative theory is confirmed. Contained in a 1965 report by National Engineering Science Co., this theory states that variations in the Earth's ionosphere have a much larger effect on the troposphere, and so on surface weather, than has previously been assumed.

If this theory is correct, then solar flare activity will be relayed through the ionosphere to the troposphere and will directly influence surface weather.

Striking evidence that planetary effects play a part in sunspot activity has been provided by J. H. Nelson, of R.C.A. The effect of increased sunspot activity on the ionosphere is particularly concerned with the interruption of ionospheric radio propagation. In studies published in 1966, Nelson and his colleagues found that disturbed conditions or radio propagation exist when two or more planets line up with the Sun or form an angle of 90 degrees with the Sun. Nelson's observations has enabled Nelson to predict disturbed conditions a considerable time in advance. He was able to predict the radio blackout of November 12-1960, 14 months ahead of its occurrence.

PLANETARY HARMONICS

Calculations of the tidal forces on the Sun due to the seven inner planets, carried out by C. J. Bollinger, showed a cyclic pattern that may be reliable to solar activity cycles. K. Takahashi has calculated tidal forces on the Sun and correlated the periodicities that appear with periodicities in solar activity and in meteorological phenomena (800 mb height anomalies).

W. H. Portig presents a harmonic analysis of sunspot activity in the N.E.S.C.O. report and suggests that the cyclic variations have components that are harmonics of a basic cycle of 178 years. Jupiter's orbit time of 11.86 years corresponds closely to the 13th harmonic. The repetition time after which Jupiter and Saturn are in conjunction or opposition, 9.93 years,

corresponds closely to the 18th harmonic. When these two components are extracted from the sunspot cycle, a 18th harmonic with a period of 111.25 years remains. This is yet to be identified. Portig regards these results as proof that Jupiter and Saturn have positions that favour sunspots.

Head's predictions for the latter half of 1967 started with a possible event on July 3, followed by events on July 23, August 5 and 26, and September 15. Events are also predicted on a somewhat low probability for October 11 and November 5. The various levels of probability arise because these predictions are made at the beginning of the sunspot cycle and there are very few data available on the detailed behaviour of sunspots at the beginning of a cycle. Head expects that as data on sunspot behaviour are gathered this year and next, the accuracy of the prediction will improve.

[Acknowledgment to "Amateur Radio Facts," produced by Bill Orr, W6SAI.]

SIDE BAND

(Continued from Page 7)

being barely worth the trouble of driving into grid current. The class AB1 s.s.b. output stage uses a variable drive signal, the same as a modulator, the only difference being that it uses tuned circuits instead of transformers. Because tuned circuits exhibit the "fly wheel" effect and audio transformers do not, it is possible in r.f. service to use the tubes in "parallel" instead of "push-pull". Otherwise, the element voltages, currents and power figures published for modulator service are a very good guide for r.f. linear amplifier service—remembering that the load impedance for two tubes in parallel is one quarter of the published plate-to-plate load for the push-pull modulator.

The notes this month were not written for those who know all about side-band or can afford to buy "The Thing" already made. I trust they may be of some help to those others who have to battle through the hard way.

73, for now, Phil VK5NN.

TECHNICAL ARTICLES

Readers are requested to submit articles for publication in "A.R." in particular constructional articles, photographs of stations and gear, together with articles suitable for beginners, are required.

Manuscripts should preferably be typewritten but if handwritten please double space the writing. Drawings will be done by "A.R." staff.

Photographs will be returned if the sender's name and address is shown on the back of each photograph submitted.

Please address all articles to the
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Transistorised Power Supply

(Continued from Page 3)

If you are lucky, the two resistors will have tolerances in the opposite direction and hence the error on the 20 volt range will be even less. However, the lower resistor should of course be used on the 10 volt range and is selected as follows:

For the time being, do not wire in either resistor. Hold resistor A in position and wind the supply output up until the voltmeter indicates exactly **full scale**. Remove resistor A and substitute B whilst observing the meter indication. The lower resistor gives the higher meter reading.

These extra meter ranges make the unit far more useful and easier to use.

One particularly interesting use is the testing of transistors.

TRANSISTOR TESTING

Small Transistors

(a) Set the power supply at 2.2 volts output.

(b) Connect the collector and emitter leads of the transistor under test (T.U.T.) to the appropriate output terminals.

(c) If at this stage the overload lamp glows, the test is finished as is the T.U.T., i.e. the wretched thing is S.C.

(d) Provided all is okay, switch the meter down through the ranges until an easily readable indication of current is obtained. This reading is generally in the microampere region and is known as the I_{hfe} .

D.c. forward current transfer ratio (h_{fe} d.c.).

(e) Leave the T.U.T. as in step (b), return meter range switch to the highest position. Bridge a 22K ohm resistor (hand held) between the collector and base connections to obtain a base current of 100 microamperes approx.

(f) Switch the meter down through the current ranges until an easily readable current indication is obtained. This figure (in mA.) multiplied by 10 is the h_{fe} d.c. Note, higher voltages may be used for the above tests provided that the power ratings of the T.U.T. are rigidly adhered to. Failure to do so will result in the untimely demise of yet another transistor.

Power Transistors

The test procedure for these types is essentially the same as outlined above, except that higher voltages and currents are involved.

Take for instance an OC28. I would normally test a transistor of this type with 12 volts between the collector and emitter using a base resistor of 5.6K ohms. This gives a base current of 2 mA. (approx.). The d.c. forward current transfer ratio is obtained simply by dividing the resulting collector current (in mA.) by two. Although power transistors are more robust than the "little fellas", it is still a wise practice to keep the measuring time down to a minimum.

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Sub-Editor: ALAN SHAWSMITH, VK4SS
35 Whynott St., West End, Brisbane, Qld., 4101

Predicted sunspot number for October is 161. This for a DXer is akin to class cuisine for a gourmet. 21 and 28 Mc. are already open during the daylight hours and a big improvement is expected on these bands. 29 mc seems to be the best band at the moment with good paths to Europe around 0700 and 2030z. Africans are also workable. The night circuit to the North West, which is usually very reliable is not operable yet on 14 Mc., but this should appear soon. Some South Americans have been worked on 7 Mc. at 1000 and a little later. Js and UAs are audible on 80 mc.

NOTES AND NEWS

Shetland Is.: GM3SVX on 14193 at 0245z. Gambia: ZDGG at 0529z, transmitting freq. 14197. Otto KENXN, QSL Manager for ZDGG, informs us that Ray will be departing Gambia in September or early Oct. This will make ZDGG a tough one to miss. Ray's operation from there is an excellent example of how some serious operating will clean up a rare one in short order.

Alabara: A letter reports that G3UDU is due to arrive in Alabara mid-August. He will be there for six months and will sign VQ9WV. John will use a c.w./s.a.b. transmitter on all bands. 10-19 mc. There will be no mail service to the island but Maurice G3NWC hopes to be able to QSP requests for a while. Wakes: WA4QXZ/KW on 14050 at 1800z. Cocos Keeling: VK9ZCF reports that ZCZT is a phony. Barry is the only legitimately active station on the island now, but is confined to 8 meters.

Rarotonga: ZK1CI will be QRV for three years from here, operating 80-15 phone and c.w. QSL: F3RUS 100. He is ex-ZLAWT.

Sakhalin Is.: UA0ER, UA0FF and UA0FM all busy from Zone 19 on 14 c.w. Franz Josef: UA1KED on 14007 at 0200z. Greenland: Curt KP1AA on 14250 at 2100z. QSL to 1803 Com. Sgd. F.O., New York, 09023.

Afghanistan: Fred Y41FV on 21300 at 1800z. QSL. Laos: XW8AX, XW8BZ and XW8BJ on between 1645z and 1715z around 21300. Malta: Ted 8H1AG on 21630 at 1345z. Faeroe: Joes OY90V on 14153 at 1300z. QSL to Box 184, Torshavn, Faeroe.

VQ1GDW: Willie of VQ1GDW fame is now in the relative tranquility of CX. Call there as a CXAN. Logs and QSLs for the VQ1 operation are with W2CTN.

Chad: SUTAL has plans to operate from here in October or November.

Muscat: MF4MAY on 14115 at 2000z. Lesoto: Ulli, long known as Z881, now signs 7P8AR, the new call for this country. Heard on 14147 listening on 14202 at 0600z.

Antigua: Harold, formerly ZD9HL, etc., will begin operating from here shortly.

Ethiopia: F3RUS on 14217 at 0520z. Pitcairn Is.: Ron W3DWG will be active for approx. six months from here. Most operation will be 21 Mc. s.a.b. with 21350 as the most preferred freq.

Cameroun: Martial TJ1AC on 21334 at 2140z. QSL. Box 20, Boufoussam, Cameroun.

South Orkney: VP8JD reported on 14 and 21 Mc. c.w. at 2100 and 1800z.

Andorra: PK1EQ, 1623z on 21374. QSL to DJ8EQ.

Svalbard: Erl JW3NI on 14038 at 0311z. QSL to LA3NI.

Yemen: 4W1C on 14102 at 1930z. QSL to W2CTN.

Tristan da Cunha: ZD9BI on 14225 at 1930z. Mt. Hermon: 4X7MR on 14215 at 1930z. Corsica: Pierre F2WS on 14215 and 14105 at 1900. QSL to home call or via Bureau.

Monaco: Joe JA3MC on 14225 at 0540z. Also holds call JA2EE. QSL to Jean, Kennedy St., Monte Carlo, Monaco.

W. Caroline Is.: KC0BY 14205 1600. W. Pakistan: AP2MR 14110 1700. AP5HQ 14025 0600. Guernsey: GC8HT 14133 1400 and various other times. Also GC3FMK 21040 1800z. Kure Is.: KH6EDY 14271 0730. Andreanof Is.: KH6FOJ/KL7 14212 0745. Also Fox Is.: KL7GGA 14270 0700. Sth. Georgia: VF8IE 14117 1845. QSL W3GHH. Gough Is.: ZD9BH 14 c.w. with very QRP rpt. Marion Is.: ZS2NI 14178 1400. QSL ZS40L. (The bulk of the above supplied by Geoff Watts, Editor DX Newsletter in U.K.)

Nule: ZK2AE active on 80 mc a.m. Try around 3.6 at 0900. St. Helena: ZD7KH 14200 and 21355 around 0700. QSL K2HVN.

Tristan da Cunha: ZD9BE and also to QRT but ZD9BH will carry on. 14 s.a.b. QSL W3GHH.

Botswana: ZS8L is on 14178 transceive. Comoro Is.: FH8CE 14133 1730, 21340 1800, 2875 1000. Also active is FH8CD.

C.A. Rep.: TH8L 14102, 14215 after 0600. QSL Box 824, Bangui.

Falklands: VP8PT 14125 2000. Port Timor: CR8AE 21290 1000 on a.m. mode. QSL J. Santos Leite, Box 223, Dilll.

Mongolia: JT1KAA is reported as consistently strong on 14105. Listens 14200. QSL Box 630, Ulan Bator.

Fletcher's Ice Island: WA1ARF/KL7 14315 0800.

Trinity Is.: KL7ND 14300 0900. (The above received from DX Ed. Goe Studd of N.Z.A.R.T. "Break-In".)

Bay Island: HR8EB is reported very active from here on 14 s.a.b. after 0600.

Taiwan: BV2A on QRV 14 c.w. 1900. QSL P.O. Box 101, Taipei, Taiwan.

Deception Is.: LU2ZT 14010 also on 7 Mc. 1000. Pakistan: AP2NMK is reported active here.

Lord Howe Is.: Once again Arch Hewitt will spend his vacation at this tranquil spot. He will be active from Oct. 3 to 10. Mode all mainly 14038, but other bands if conditions are suitable. Call VK3XKZ/2.

ACTIVITIES

Dave VK3QV says 28 Mc. has picked up again. He lists the following as worked: KA2KKE, KR6LS, KX600, VK1AU, V56PS, V59AB, ZL171, 9J2PT, VK3KL, VK3DJ, VK3BS, VK3BS (Lne), plus most of the W areas. Dave is off on a world business tour. No DXing included. (Bon voyage—AJ.)

Chas VK4UC writes to say he is QRL with many things, but did manage these on 14 Mc. c.w.: HA8UF 0800, HA8DA 0404, DJTDS 0330, DL6ZZ 0500, G3UBE 0700, HB8AB 0600, Y3-BVZ 0600, Y3-AW 0600, UY3FS 0800, UY3F 0400, F5MG 0800, G8RI 0800, SP1BIX 0440, KP4CL 0630, 11BRM 1000, VK3CR 0600, P2-1EW 1030, GC2FAT 0640, DJ3K/LK 0430, VP6WR 1030. Best QSLs received were KJ-6BZ, VO1AW, WAS8VU/VP9, VR3L, CT1YA.

KG6IF, HS1JM, GB2SM, TG6IA, YS1VST, ZL1AI and 5W1AS.

Peter VK4JP reports various openings on bands 40 through 19 mc. On 14 s.a.b. he lists the following: DL8CT, FY3XKB, ON4IZ, G4FC, UA4KED, HIRTF, 4X4AM, SM5AZU, IS1LCO, G3NAS, F3DD, SM5KH, UQ3KBH, EA8BQ, KL7WAH, PA0EC, OH5HD, OAKBO, LX1WE, HIRTA, HIRTA, F3RWP, LA8E, PK1IE, CE3ZN, PY3APH, CT1B, OH2BN, ON4GJ, E14AZ, G3NY, W3DWG/VB8, ZP3AL, V56FQ, G3TA and many more.

Peter reports South Americans workable on 7 Mc. at 1030z. (Thanks OM.)

Dud VK4JH logged these. Conditions are or the improve he notes. 14 s.a.b.: VK4HG 14100 0716, F3CR 14105 0700, W1CZ/KM3 1430 0045, TG8OP 14120 0700, VE1WH 14180 0720, VE8MK 14125 0720, IT1AT 14120 0500, T5C5MR 14120 0600, W3RCC 14110 0830, VQ8Q 14100 1815, F3CQ 14150 0700, CT1B 14100 0830. On 14 c.w. ZS8BL 14032 0700, 8L1KG 14050 0813, 6WDD 14050 0730, and more.

Ken VK3TL has a lament. He is running out of countries to work. 14 Mc.: SL2ZT, IS1RJA, DJ2IB/LX, VQ8JH, 9L1QG, 9L1KG. QSLs were VQ8AR, ON8XA, CR6BC, MP4MAW, CX3CQ, KX5KMB, 5W1AA, CT3AS, VQ8CA, US4RTEK, CX8AAU, CX8AA, GH8ET and EL2S.

Keith VK4DU from his Utopian QTH worked the following on 14 c.w. in one hour using 2.5 watts and doubling in the final: DJ2KM, K6TYQ, OZ7KRV, 11AMO, F3VN, WA8FHF, G3CQS. Also many QSOs have been made on 21 Mc. with less than 1 watt.

SOME QTHs

SL1KG—Yasme. DJ2IB/LX—DJ2IW. F3JCC—Wrayd. VQ9G/Box 191, Mahe, Seychelles. VK4HG (Willis Is.)—Via VK3 Bureau. 5W1AS—Box 486, Apia. VQ8AS—Tuxen. TZ4AC—KA4MC.

OH AWARD (issued by S.R.A.L.)

Contacts must be made after June 10, 1947. DX applicants have to produce evidence of QSOs with at least 15 OH stations in at least five OH call areas. Certified by two A.R. officials is sufficient. C.w. or phone or Morse is okay. Contacts with marine stations will not count. Details required are station worked, date and QTH plus report. Send list with five I.R.C.'s to OH Award Manager, P.O. Box 306, Helsinki. (Supplied by courtesy of Award Hunters' Club.)

SUNMAARY

My thanks again to the column's supporters. DX news, reports on conditions, QTHs etc. are always needed. To space fillers, help swell the mail bag. 73, AL VK4SS.

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FIFTY AND OVER

BY ROY HARTKOFF*

VK3ZFC, VK3ZFC, VK3ZFC. This is VK3ZOM Mobile calling you, Bert. VK3ZOM Mobile calling you. Over. VK3ZFC, VK3ZFC, . . . Received you that time quite okay, Bert. The converter seems to be working better now. Yes you heard right. I'm mobile. I've been meaning to get round to it for months. That's why I haven't been on the air for the last week or so. I've been too busy getting the gear ready. Hope you can still copy me, VK3ZFC, this is VK3ZOM Mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM mobile returning. Yes, Bert, all copied

a hundred per cent. Thanks for the report. Glad to know that it's such a good signal. You say you're surprised at the lack of mobile flutter? Well, Bert, I'm not actually driving along. I'm stationary mobile in the drive at the side of the house. I've got one or two little things to finish off before I can just jump in and drive off. Part of the rig's sitting in the glove box and the rest is on the seats and the floor. But never mind, I've made a start and that's the main thing. VK3ZFC, this is VK3ZOM stationary mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM mobile returning. Glad to hear you like the modulation, Bert. I suppose it is better than most of the mobiles. It's funny that you should say it's almost as good as the home modulator because actually it is the home modu-

lator. I'm going to get another one, of course, but I wanted to get on the air as quickly as I could so I used what I had. As a matter of fact the rest of the rig is the home gear too. It's a bit hard to tune the AR7 when it's sitting on the floor in the back and, of course, there's no room for anyone else in the car except the driver. But never mind, the main thing is to get mobile. One can always fix up the little details later. VK3ZFC, this is VK3ZOM mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM mobile returning. Well, Bert, I must say you have got a good memory. It's months since I told you about the home rig. Fancy you remembering I am running 80 watts! You're quite right. The power supply is a bit of a problem. But I'm not actually worried about running the car battery flat. You see I'm using the home power supply with a mains lead out through the window. That's one of the details I'll have to organise before I can actually operate while I'm driving along. VK3ZFC, VK3ZFC. This is VK3ZOM mobile listening for you; over. . . .

VK3ZFC, VK3ZFC. This is VK3ZOM mobile returning. It's strange you should mention aerials, Bert. No, I'm not using a whip; that's another little detail I'll have to fix. But meantime I figured that since I had to have a mains lead out through the window I might as well have the home aerial lead as well. It saves such a lot of time and trouble. I'm afraid I'll have to stop now, Bert. I've got to clean the car and the leads aren't long enough for me to be able to work mobile at the other end of the drive. Mind you, as I said, there's a couple of little details to fix up, but I've got started and it's fine to know you're operating away from the shack and independent and out in the fresh air with the birds singing and everything. Why don't you go mobile yourself, Bert. It's not as hard as you might think and if you get stuck maybe I could give you some tips. Anyway, you ought to try some time. VK3ZFC, this is VK3ZOM mobile off and clear and closing down. Cheers, Bert. I'll work you mobile later when I've shifted the car back to this end of the drive. VK3ZOM mobile closing down. Cheers. — . . . —

"CQ" W.W. DX CONTEST

PRECIS OF RULES, 1967

Dates: Phone: October 21 0000 hrs. GMT to October 22 2400 hrs. GMT. C.W.: November 25 0000 hrs. GMT to November 26 2400 hrs. GMT.

Bands: All authorised frequencies between 1.8 and 28.7 Mc.

Cypreses: 35/35T plus zone. (30 Eastern Australia, 25 Western Australia).

Scoring: QSO point value: (a) 3 points between stations in different continents; (b) 1 point between stations on same continent but in different countries; (c) contacts between stations in the same country are permitted for zone and/or country multiplier but have NO QSO point value. Multiplier is determined by the number of zones and countries worked on each band.

Final score: (a) single band, zones plus countries multiplied by QSO points; (b) all band, sum of zones and countries from each band multiplied by total QSO points of all bands.

Divisions: (a) Single operator, all bands OR single band; (b) multi-operator, single transmitter, all band only; (c) multi-operator, multi transmitter, all band only.

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Sub-Editor: CYRIL MAUDE, VK3ZCK
2 Clarendon St., Avondale Heights, Vic., 3034

N.S.W. V.H.F. AND T.V. GROUP

The current v.h.f. topic is the work in progress at Dural. The new 2 m array comprising four 16-element beams in quadrature is laying down a mighty signal. Reports of satisfactory reception, have been received from Canberra, Newcastle and several points west of Sydney. Plans are in hand to increase the transmitter efficiency and this should help raise the signal level in some of the more remote regions. Further 2 m improvements are in progress including the construction of a converter less prone to cross-modulation.

On 6 m Dural now sports a new antenna for \$3,586 M. This antenna, made and loaded by George 2ZDR, is a coaxial dipole. The tip of the new 8 m antenna is approximately 67 feet above ground, just below the two metre array. At a later date ground-plane radials will be added to this antenna. A worthwhile improvement has been noted in the 6 m coverage from VK2WV, one contact being with VK2ZVL mobile in the main street of Newcastle. Keith at the time was radiating four watts of R.F.

While the direct coverage from Dural is being gradually extended, we must thank those stalwarts who front-up every Sunday to relay these broadcasts on u.h.f. and to the more sheltered areas. Owing to the sheltered nature of the Wollongong Amateurs, the coverage to date has been rather scratchy. However, things may improve as VK2AND has volunteered to set up on 144 Mc. and relay back to Wollongong on the Illawarra net frequency of 33.982 Mc.

Any districts not directly, or indirectly, covered by the v.h.f. broadcasts, and who would like to hear them regularly, should contact the V.h.f. Group Secretary, Norm 2ZXC. It is possible that we may be able to organise a relay net if tape recorders are available a weekly exchange tape of the broadcast.

The 6 m event of August was the visit to Sydney of John FK2AB maritime mobile. John was operating on 52.1 Mc. and tuning 52 to 54 Mc. each time listening to the 6 m net frequency. For those who would like to work John, he has only two transmitting frequencies, 52.950 and 52.1 Mc. Whenever his ship, Nickel One, is in Australian waters he will be active on 6 m. John will also be active whenever he is in his home port of Noumea.

How many New South Welshmen worked the 6 m DX during the Scouting Jamboree on Saturday 8th August? During the year, the rain in the afternoon, VK4s and VK5s were heard at 59 levels, but only working each other on VK3s. Six metre DX sure pops up at the most unexpected times.

Talking of DX. It would seem that one Sydney station is getting set up for the 2 m DX season this summer. Ross 2ZRU was recently heard testing his new 2 m s.b. exciter and talking about the linear coming up. As Ross has a 60 element array, the locals will hardly be his signal.

Finally, if these notes appear in time, don't forget the combined car trial and fox hunt on Sunday, 8th October. The fox will be 2ZAU, operating frequency for the hunt being the 33.986 Mc. a.m. net. 73, Keith 2ZAU.

VICTORIA

Activity in Victoria is still at rather high level. In Melbourne, some 20 new stations have appeared on 2 m. 6 m is still very popular with most activity during commuting times and at week-ends. Although no DX reports have been received, there have been frequent contacts between Melbourne and the Northern Country areas.

The VK3 V.H.F. Group converter project is well under way and by the time you receive this "A.R." there should be quite a few units in service. Converters for 2 m and 432 Mc. also fully transistorised are in an advanced state of development.

Copies of the VK3 Field Day rules and scoring can be obtained from the V.h.f. Group.

Any readers requiring further information of the VK3 V.h.f. Group's activities should write to the undersigned or the Secretary V.h.f. Group, P.O. Box 35, East Melbourne, Vic., 3002. Until next month, 73, Cyril 3ZCK.

4th Annual V.H.F. Convention: The VK3 V.h.f. Group will hold its 4th Annual Convention over the week-end of 7th and 8th October, 1967, at Geelong. The V.h.f. Group and the Geelong Amateur Radio Television Club have combined to organise and arrange the programme for this year's Convention. Don't forget the date: Saturday and Sunday, 7th and 8th October, for the V.h.f. Convention.

Coming v.h.f. events in VK3 Oct. to March:
Sat./Sun., 7th and 8th Oct.: V.h.f. Convention.
Sun., 13th Oct.: 1st V.H.F. Field Day.
Sun., 15th Oct.: 2 Metre Scramble.
Wed., 18th Oct.: V.h.f. Group Meeting.
Wed., 25th Oct.: 4 Metre Fox Hunt.
Sun., 12th Nov.: 2 Metre Scramble.
Wed., 15th Nov.: V.h.f. Group Meeting.
Sun., 19th Nov.: V.H.F. Field Day.
Wed., 22nd Nov.: 3 Metre Fox Hunt.
Sun., 26th Nov.: 4 Metre Fox Hunt.
Sun., 17th Dec.: V.H.F. Field Day.
Wed., 20th Dec.: V.h.f. Group Xmas Party.
Wed., 27th Dec.: 2 Metre Fox Hunt.

Sun./Mon., 31st Dec./1st Jan.: VK3/VK3 Field Day.
Sun., 14th Jan.: 2 Metre Scramble.
Wed., 17th Jan.: V.h.f. Group Meeting.
Sun., 20th Jan.: V.H.F. Field Day.
Wed., 24th Jan.: 2 Metre Fox Hunt.
Sun., 11th Feb.: 2 Metre Scramble and National Field Day.
Wed., 21st Feb.: V.h.f. Group Meeting.
Wed., 28th Feb.: 2 Metre Fox Hunt.
Sun., 10th Mar.: 2 Metre Scramble.
Sun., 17th Mar.: Final V.H.F. Field Day.
Wed., 20th Mar.: V.h.f. Group Meeting.
Wed., 27th Mar.: 2 Metre Fox Hunt.

Eastern Zone: Nothing special to report from the Gippsland area. No 1s openings observed, and each 23-day cycle is better than the one before and gives a monthly peak average of 28-32 Mc., and often goes as high as 39 Mc. to the Pacific. The boys in the Zone are getting ready for the coming DX season and are looking for 2 m a.m. and s.b. contacts after 2100 hours each Sunday evening. 73, George 3ZCK.

SOUTH AUSTRALIA

It is apparent that the majority of operational v.h.f. contacts in VK5 are ardor contest seekers. The support given to the most recent R.D. Contest was extremely gratifying. Many fine scores were noted on the v.h.f. bands especially those of 2ZTS, 2ZKX and 2ZUL, who spent a considerable amount of time on the bands.

Considering that Limited licensees are now added into that complex arithmetical state scoring formula and providing that all the respective logs and submitted to the F.C.C. by the VK5 v.h.f. operators the State Trophy may again become the property of the VK3 Division for the ensuing year.

Of late Rod 5ZSD ex 6ZDS has been airing his gear as he progressively unpacks his equipment. Barry 5ZMW is also currently refurbishing his gear with an elaborate system of insect amplifiers for both 6 m and 3 m, utilizing QRS, for use with his s.b. exciter. Numerous other Ham shacks are undergoing changes for increased radio and power.

Local activity has been reduced due to the state of building, nonetheless all for a good cause. Continuing, however, is the daily scheduled 15 min. between Herb 3BV and Mick 5ZDR to evaluate the propagation characteristics between 144 and 432 Mc. 73, Colin 5ZIJ.

WESTERN AUSTRALIA

One of the best ever junk sales, with Roy 6RY with the hammer doing a sterling job, should stimulate further activity. Several V.h.f. Group members completed their fox hunt gear or added to it. Valves sold suggested power increases were contemplated in some stations.

Laurie 6ZEA is going to Dirk Hartog Island (near Shark Bay on the W.A. coast) with an expedition party of 38 boys from Wesley College. The party will split into four groups, linked by radio with Laurie as chief operator. He hopes to set up gear on 6 m and is optimistic of making contacts from this radio dead spot.

Activity on 6 and 2 m continues mainly on the 6 m a.m. net, 52.586 Mc. (crystal frequency 8784.44 Mc.). Two metres is a good band and not difficult to build gear for—we should make more use of it in VK6. 73, Laurie 6ZEA.

TASMANIA

Not a great deal of news this month as activity is at a low ebb at the moment. It would be greatly appreciated if all correspondence for "A.R." is received at my address, Flat 6, 7 St. George's Square, Launceston, 7230, by the 24th of every month as these notes have to be in Melbourne by 28th of each month.

6 Metres: Activity on this band is mainly confined to the 53.933 Mc. a.m. net frequency. At the time of compiling these notes, no DX has been reported to me.

2 Metres: Activity on this band has been very low this month. This could be due to the cold weather we have had lately, but should pick up as the warmer weather arrives. Bevan 7ZBW has recently acquired some 2 m f.m. equipment and is operating on Channel A and B. So you Melbourne f.m. enthusiasts keep an ear open for Bevan when he points his beam in Melbourne's direction.



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SW
 Sub-Editor: D. GRANTLEY, WIA-12022
 P.O. Box 222, Penrith, N.S.W., 2750

The R.D. Contest was the major activity for many listeners during the month of August, and excellent conditions once again prevailed. There were many VK6s and VKs to help the scoring and some good logs will be submitted.

We look forward to our next contest which will be the VK/ZL World Wide DX event to be held over two week-ends in October. Details have been published in "A.R." and you are advised to pay particular attention to the rules covering the Contest. Section I is a very interesting contest, with a very high scoring rate and there are always plenty of good DX to be found.

VK3 Divisional News: The VK3 S.W.I.s found the R.D. Contest slightly different from other years. The Melbourne boys appear to favour the club station approach rather than entering the single operator section. The boys on a.m. receivers had a lean time, as most of the stations heard in Melbourne were on s.s.b. and if you could not resolve it you missed the majority of stations.

The elections for office-bearers for the next twelve months will take place at the September meeting. If you have missed out on attending meetings during the year you will not have seen demonstrations of teletype equipment, v.h.f. fm. reception, tunable i.f. receivers, lasers, Project Australia and the use of Aegis coils, so remember fellows, the lectures for the rest of the year are as interesting as those which have been given previously.

VK1 Divisional News: Once again I have no official news from this group, and the only report I have is that attendances at the meetings have been very poor, and that any suggestion of the advancement of the group will be appreciated. I did hear in the broadcast that visits to such places as the O.T.C. Downsides are proposed in future. I can report, that all cards received at the bureau have been despatched.

DX NOTES

The best news we have had is the appearance of Don Miller from Rodriguez Is. as **VQCBEB**. After a long hunt I managed to log one of his QSOs. It must have been very helpful in this DX-pedition to have a VK2 signal come up on their frequency calling CQ.

W3DWG/VRS is on the bands, QSL via **GSDO** for around the States. **GCJFNV** has been on the 20 mhz band s.s.b. quite regularly around 5 p.m. E.A.S.T. He is on Jersey.

CRBGO is on leave and operating from **CTI**. **ZDVID** was working into Sydney recently. His QSLs go via the R.S.G.B.

Want to know the best practice? Then look for **KHEAFS** who has one of the best transmissions I have heard.

AROUND THE SHACKS

Peter Drew is down at Balcombe Sligs School. Using an Eddystone EC10, Peter has made a rather of the R.D. Contest and recorded some very fine DX as well. On 7 Mc. c.w. Ws, JA, VE1DZV, UWOPF, KH6EPW and on s.s.b. KH6FLV/M, K4C4UN, HK6AGW, HK30J, KH6IBB, C4NXX, OA6QG and G3AOC. On 14 Mc. c.w. KH6CJL, YODDD, UA8KCA, and s.s.b. SM3YV, LX1BR, GJ4JIM, TG0BP, HR1KAS, CT1BT, F0RWB, EA8CB, UC6FE, G3RSI, VE6MZ, YP6PC, SW1AS, DU1FH and many others. Only other loggings by Peter were on 21 Mc. where he logged **FB8XK** on c.w., **ZS8QZ** and **ZD4JH** on a.m., with **ZS3FT**, **KX6BU**, **VK6BK**, **VK0CR**, **VK6VM**, **CR7FM**, **KAM6F**, **ZS6KC** and **ZS4K** on s.s.b. There have been noted on 20 at 1130 to 1300 hours.

Eric Trebilcock has logged his usual issue of good 'uns. **VP1MW** (Box 554, Belize) and **W2NAU/MM** were amongst the doings on 7 Mc. **W3FACB**, **HK8AE**, **KP4PBB**, **HK7XJ** and **ZD8J** were the best on 14, whilst it is pleasing to note that Eric logged 30 Europeans on 3.5, a band which frequently reveals much hidden activity in the early hours. 387 cards in 81 countries and 31 zones are his tally so far this year, the latest being from **FOBJE**, **FO6BT**, **KH6KJ**, **W1DZL/KS**, **OE5EVL**, **T1FZ**, **VE1WVG**, **W1ZJ**, **VU2DJA**, **ZB6AN**, **ZS8KC**, **SV1NV** and **SM4LP**.

Some of the more interesting calls I heard were **W1C**, **W1C**, **LA6NI**, **YNIHQ/WA**, **EASCG**, **VQCBEB**, **KX6FM**, **FB8YU**, **UQ6CQ/**

UA0, CR6GO/CTI, **XE1AAN**, **ON3ZO**, **FM7MO**, **V9SMB**, **G1RHXV**, **CTJAS**, **CO2FM**, **V84CR**, **LUDGP**, **K4C4J**, **TG0EP**, **T1JQQ** and **H80ADH**. Whilst it is a shame that **CT1BT**, **VE1DZV**, **VE1SRD**, **VK6GP**, **ON8XA**, **OH201**, **NI2AAX**, **CT180**, **YS1AG**, **GC2FMV**, **OX3WV**, **EZ4KL** and **VQCBEB**. A lone a.m. station was **CT1NW**. The 20 mhz band has been outstanding at this QTH, the Europeans being heard nightly at around 7 p.m. our time, and still coming in 12 hours later.

Ernie Laif has logged the following on 20 mhz s.s.b.: **UA6XG/P**, **LA6NK**, **LUDBM**, **ZS8XV**, **ZS6VE**, **ZS3FP**, **UW0AH**, **UA1CK/JTI**, **ZL6AC**, **CH7CO**, **ZS8AIP**, **E48NI**, **K1P7P**, **CT1EE**, **SM7TE/M**, **VE6MZ**, **RL2AC**, **SL3GK**, **4U1TU**, **KP4AST**, **E1E2B** plus the usual Gs, etc. Inward QSLs are **KX6JJ**, **ZS4P**, **ON8VL**, **CX2AR**, **VE1RL**, **KV4VY**, **VK2AS**, **OY7ML**, **IC3ELA**, **UP2NV**, **UA3CT**, **DL8KG**, **JAGZ** and **JA10CA**, the latter two being for 18 mhz.

Finally, from Mac Hillard came news that the 10 mhz band is on the improve, with strong signals coming in from West Coast U.S.A., **DU** and **JA**, plus a good signal from **PY4AE**. Well chaps, that winds it up for this month. In the meantime all the best in the VK/ZL, de Don L3022.



Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the Publishers.

FOREIGN OPERATION

Editor "A.R." Dear Sir,
 I have been advised per medium of "Dialog", official magazine of the International Amateur Radio Journalistic Society, that following efforts by Cliff Evans, **K6BX**, creator of C.I.C., Chairman I.A.R.Z.S. etc., liberalisation in operating procedures has been effected in the aforementioned European countries.

Amateurs visiting Hungary can now obtain permission to operate using their own call 'HAS'. It is not necessary that one's own country has a reciprocal licensing agreement with Hungary. This country's action is unilateral with no strings attached. It is simply a person to person goodwill action.

Also nationals of all countries visiting Yugoslavia may obtain VUT calls and operate freely without any requirement, or any bi-nation treaty.

Poland, too, has announced similar actions and relinquished need for any reciprocal treaty. Gs who have mobile permits may now operate 'M' while touring Hungary and Yugoslavia. It is also permissible now that visiting Hams or any Hungarian may send third party messages to Hams elsewhere in the world and vice versa. Same applies to Yugoslavia.

Hans Radio moves one step further ahead.
 —Alan Shawsmith, VKASS,
 Third Vice-President, I.A.R.Z.S.



YOUTH RADIO SCHEME

Another month has gone by in the Y.R.S. and things are really getting into gear with more and more boys becoming interested in the hobby. The club leaders are doing a magnificent job in keeping the movement going. The Correspondence Section fills a very big part in the Y.R.S. and special thanks should go to past and present leaders of Correspondence Groups. Without these men, some being former Y.R.S. students, a large number of boys would be without a faring hobby.

The new issue of the N.S.W. Newsletter has been received and is full of news and information. This is a very good effort by the committee and represents much hard and co-operative effort. Rog VK1RD has resigned from producing the Newsletter due to the many pressures of the work involved in being Supervisor of the Correspondence Section.

A note of interest is that the Intermediate Syllabus has been revised and now follows the Junior Syllabus a little more closely.

CLUB NEWS

VK1: Canberra Y.R.C. has had 14 out of 17 students pass the Elementary results. These will go on to the Junior Certificate while a new class is being formed for the Elementary.

VK2: There are six new club registrations. Welcome to Newton College, Scots High, Mariast Brothers High, Sydney Teachers' Col-

lege, Lyneham High, and Dee Why. There are now 31 active clubs.

Westlakes R.C.: David Fraser has received the call sign of **VK2ZYK** and is one of the high school students to reach this coveted ambition.

VK3: A general meeting of all member clubs and correspondence members was held recently with over 30 members present representing 60 per cent of the clubs.

VK4: Bundaberg—The boys are still working on their 3w amps.

Maryborough—Office-bearers are President, Paul Russel; Secretary, Ken Ashford; and Treasurer, Ken Widdows. The club has some soldering assembly circuit work going very well. There is also a 50w. station operating regularly from here as **VK4XNN** and can be heard on the net the first Saturday of the month at 9 a.m.

Gympie—There has been some local newspaper publicity for Y.R.S. resulting in three new members.

Clontarf Beach—Some successful experiments are being done with modulated light beams and some good distances have been achieved. 73, Mona.

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FEDERAL AND DIVISIONAL MONTHLY NEWS REPORTS

(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

FEDERAL

INTRUDER WATCH SERVICE

You have already heard about a W.I.A. proposal to inaugurate an Intruder Watch Service in Australia in line with similar activity being carried on in Regions I and II. These are the reasons:

Why do we need an Intruder Watch? In theory we need it in practice we shouldn't! But in fact we need one because countries DO radiate transmissions in the exclusive Amateur band frequency assignments—sometimes in defiance of International Telecommunications Union (I.T.U.) conference agreements, and sometimes because the countries concerned are non signatory to I.T.U. agreements.

In respect of the latter, Administrations can only do their best to negotiate the removal of the offending station to an out-of-band frequency; but in regard to the former it should be possible—and indeed reasonable expectation—that an Administration will negotiate for the removal of unauthorised transmissions from Amateur band assignments in the same way as they would act to have interference to commercial services corrected.

There are, of course, problems in the case of the Amateur Service. Firstly, we have multi-frequency assignments in a number of bands throughout the frequency spectrum as compared with fixed frequency allocations in the case of the commercial service. A report of interference to a commercial transmission can bring prompt action because only one frequency is to be controlled and dealt with. On the other hand, interference to the Amateur Service concerns a frequency assignment complex which is difficult to imagine will be monitored 24 hours a day.

This is where the Amateur and Short Wave Listener can play an important part in effectively monitoring the frequency frequencies, and with a standardised and co-ordinated reporting system, assist the Administration in the problem of removing unauthorised transmissions in a Region and in this system is known as the Intruder Watch Service and it works to the advantage of the Amateur Service and the various countries concerned.

The W.I.A. believes the Australian Administration will co-operate in such a system if accurate information can be directed to its monitoring stations.

The British Post Office (U.K.) and the Federal Communications Commission (U.S.A.) co-operate expertly with the Amateur Service representative society on this problem in these two regions. We confidently expect the same co-operation will exist in Australia.

Basically the A.R.R.L. and the R.S.G.B. have the same system of monitoring, recording and reporting. The A.R.R.L. uses a triplicate carbon copy system wherein the first copy is forwarded direct to the F.C.C. the second copy to the A.R.R.L. headquarters, and the third copy is filed by the Intruder Watcher making the report. The R.S.G.B. uses a similar system to achieve the same recorded details of interference.

The American system places the responsibility for accurate reporting on the appointed watcher who forwards the appropriate completed form directly to the F.C.C. at the same time telephoning the Divisional representative monitoring station. The R.S.G.B. system, on the other hand, correlates the reports from its watchers and forwards a comprehensive report to the Divisional form to which is attached a copy of "traffic" handled by the interfering station. Both Societies circulate regular information sheets listing details of known intruder transmissions to the members of their Intruder Watch Service.

The W.I.A. Federal Executive has collected all the information on the systems used overseas. From this information will be formulated a satisfactory system suitable to Australian conditions. Before any details are worked out, however, we need to have an organisation to back the system. We will no doubt have little trouble in obtaining the services of officers within the Divisions to facilitate the operation of the detailed information. But the system won't "get off the ground" without a considerable number of people in the Divisions many points around the Commonwealth prepared to devote a reasonable amount of time

each day to monitoring interfering transmissions and accurately filling in the appropriate forms which will be supplied by the W.I.A.

This is where YOU—the Amateur and S.W.L.—can play your part in protecting your own bands. David Wardlaw, VK3ADW, has been appointed Federal Operations Officer of the proposed Intruder Watch Service. Can you assist to get this project under way? If so, please drop a note in the mail addressed to—

D. Wardlaw, VK3ADW,
Intruder Watch Service, W.I.A.,
Box 2611W, G.P.O., Melbourne, Vic., 3001.

Remember, you don't have to be a licensed Amateur! We would like to encourage S.W.L.s to also participate in this useful service. If you are interested, ACT now!

—G. Maxwell Hall, VK3ZS,
Federal President, W.I.A.

— . . . —

FEDERAL QSL BUREAU

The Milan Radio Club sends details of its Milan Award available for contacts with members of the Club or with stations in the Province of Milan. Club members count 2 points and Province stations 1 point. DX stations must earn 10 points for the award. Applicants together with 8 I.R.C. to the Awards Bureau 11RCD, Cleato Resini, Via Rimini 13, Milan, Italy.

The L.P.R.A. Panama advise a change of address for all correspondence including the QSL Bureau. The new address is P.O. Box 9A-175, Panama 9A, Republic of Panama.

The new inward QSL Manager for the Queensland Division is Timothy Scher, VK4RL, 95 Stephens St. Morningside, Brisbane, QLD, 4170. Tibby was appointed on the recent demise of our old friend and colleague, Jack Flen, VK4FJ. Jack held the job down for a score of years, giving the job his undivided attention and knowledge and extending the maximum of co-operation to all his fellow QSL Managers.

Results of the 1966 All Asian DX Contest are just to hand from the J.A.R.L. Australian winners list includes VK6 JAAKX, TSM, SAPI, JABA, ZAPK, 9CJ and GGN.

Traffic through the Federal Bureau for August again increased to over 11,000 cards. Obviously the slump in June was caused by the diversion of shipping from the Suez route to the Cape, as a consequence of the Middle East conflict. While the R.S.G.B., NZ.A.R.T., D.S.A., D.A.R.C. and some other Bureaux are observing the new VK QSL arrangements, other Bureaux from which big consignments are received, are so far ignoring the instructions. Forceful reminders have been sent to the J.A.R.L., the A.R.I. and Box 88, Moscow.

VK3ZMI was the first applicant for the 1966 "CQ" mentioned in these notes in August.

—Ray Jones, VK3RJ, Manager.

— . . . —

NEW SOUTH WALES

COUNCIL NEWS

The President and Councilors have been meeting more frequently than usual, and in the last few weeks working parties of Councilors have been systematically, with the aid of the newly appointed Secretary (Mrs. Long) and Councilor George Wilson, virtually re-writing all the records and completely reorganising the Division. A new filing system is being completed and the banking procedures have been completely overhauled. Ken Finney says that following the appointment of a Secretary, "a new look" Division will emerge.

SILENT KEY

It is with deep regret that we record the passing of the following Amateur:

Ex-VK4CW—Jack Worth.

The formation of the Federal Company will mean that the Division will need to be very efficiently run, and N.S.W. will be ready to accept and handle the requests of this organisation with promptness and accuracy. The re-organisation will rest in the issuing of back Membership Certificates and members should receive these soon. The issue of Certificates will in future become automatic as the system catches up with the backlog. Council has said that the membership drive is encouraging, but that there are still many more non members and as a challenge Council has suggested a target of 2,000 members this year.

The taped lecture service has now been handed over to the Secretary and all enquiries for the tapes should be sent to the Secretary for attention. The service has 43 lectures on a wide range of subjects which are illustrated with accompanying slides and country and interstate clubs and divisions are invited to use this service. The Morse tape service is a separate set-up and is handled by Ern Rodakis, VK2EH, Mangrove Rd., Narara. Ern has 180 tapes in circulation. Don't forget to give details of the speed of YOUR recorder, number of tracks and encoder 25 c.p.s. You can, if you prefer, send your own tape, but allow time for Ern to copy for you.

The President reports that the Bulletin and the General Meetings will in future contain a report of Council activities in order to keep all informed of the Division's happenings and provide details of future events. A minimum of business will be handled at meetings with the emphasis more on lectures and rag-chewing.

BULLETIN EDITORS

Council has received the notice of resignation of the Bulletin Co-Editors from this position after the publication of the October issue. The General Meetings will in future contain both these most important tasks for the last five years and have decided to pass on this job to two new Editors. Both Gerry and Ernie are awarded the position of Editor, which occupies a fair amount of their time. Council very much appreciates the past efforts of the Bulletin Editors and is seeking to find two Amateurs to take over the job. If you would like to take a more active part in Institute affairs then here is a position to fill your need.

EDUCATION OFFICER

Harold Burtoft, the Education Officer, has asked to be relieved of his position after Christmas. Increasing private commitments are hindering Harold to find it difficult to carry on in this position which he has run for the last seven years. Council is seeking someone to take over this position from Harold.

AUGUST GENERAL MEETING

The August general meeting was held at Wireless Institute Centre on Friday, 25th, being opened by President Ken Finney. E. P. Ken gave a fairly comprehensive report to the meeting of the activities of Council and the Secretary. The President then gave the results of a questionnaire which was given out at the meeting last month in order to find out the members' choice of lecture topics. The results were as follows:

Antennae 38 points (14 per cent. of total), transistors 33, solid state r.f. 27, test equipment 20, mobile gear 16, a.s.b. building 20, television 17, a.s.b. theory 16, crystals 13, r.t.t.y. 10, DX and predictions 4 points. Total 283 points.

Ken further has announced that he is handing out to this meeting, but the results will not be known until later. The lecture being on r.t.t.y. will no doubt influence the result.

The President then introduced the lecturer, Mr. Pat Bennett, who spoke on r.t.t.y. Mr. Bennett had teleprinter machines set up coupled to a tape transmitter and showed how the machines go back and forth, sending out slides and with his very easy to understand lecture the audience were quite engrossed in this r.t.t.y. and its possibilities. At the conclusion of this lecture Mr. Bennett answered many and varied questions, and these showed that those present were very keen, and that r.t.t.y. is quite a new thing. The Amateur Radio and could prove to be very popular in the future, depending on the release of

suitable machines to the Amateur ranks. The vote of thanks, duly carried, was moved by Bill ZAGF who apologised for the absence of the President and Council (they were meeting on another business meeting). The meeting was formally closed by Bill on behalf of the President.

1968 CONVENTION
As announced earlier, the Convention will be held over the holiday period, weekend at the end of January. Further details are to be handed regarding the Annual Dinner, the cost of which has been firmly set at \$4.50. Dress for the occasion will be casual. Full details will be published in the Bulletin and in later issues of "A.R." when all details are finalised. A full list of speakers and details have been decided on yet except that Ken Finney says it will be different.

W.I.C.E.N.
Sunday the 20th saw some 30 odd cars and 70 Amateurs and XVLA's spend the day at Dural Transmitter, erecting the much talked about tower for the antennae. Unfortunately, the tower was not originally dismantled by anyone present so the task of re-assembly was difficult. Considerable ancillary work was carried out to describe the tower and completed until 7 p.m. or so. Specially designed antennae for the W.I.C.E.N. net transmitters are to be fitted to the tower shortly.
The room for the Communications Centre at Acheson St. is almost complete and along with the renovation of the lower floor this area is now beginning to look sensible and tidy. 73, Stan ZERD.

CENTRAL COAST RADIO CLUB
August appears to be a month of activity for the Central Coast Branch. The usual monthly meeting was held on Friday, 18th August, but with a most interesting lecture from a Newcastle Amateur, Mr. Ian Fyfe, VK2ZIF, described his single sided band transmitter transceiver. In keeping with the components, the size of the unit was a mere 7 x 3 x 3 inches. The unit was given, with an oscilloscope to illustrate wave forms.

The lecture ended with an active question and answer session, and the issue of printed sheets on the transceiver.

HUNTER BRANCH
The September meeting of the Branch, held in the Technical College, was well attended. The speaker, Lionel, described the design and manufacture of printed circuits in the shack. Apologising for his recent efforts with bright yellow, chemical wash, clean, and metal and clears any classroom, Lionel gave a most informative discourse on all Amateurs need to know about making their own circuits, both simple and complex. Lionel achieved something which many lecturers hope for but seldom reach, that of audience participation in the display. Less than that some of our young lads were dispatched to the etch bath, let me reassure you that the participation was in the form of assistance with the design of a simple circuit to be etched on 2 1/2 by 3 inch board. Quite a deal of discussion ensued and the final design was the joint effort of everyone in the room.

Surrounded by the tools of the trade, including an electric radiator, several large plastic containers, cans of spray, chemicals and butane gas, not to mention stencil knives and the rest, Lionel made short work of painting the design and etching the circuit while the lecture was in progress. Even the old men of printed circuits, Ian ZJZF and Tony ZJTC, reported that they had learnt something new and everyone went away delighted after carrying with acclamation the vote of thanks moved by Bill ZJW.

During the business section of the meeting, President Frank ZJFX outlined the programme for the Field Day to be held this year at Bolton Park on Lake Macquarie on Sunday, 15th October. A full programme of highlights was given for Amateurs and S.W.'s as well as events for the ladies and entertainment for the children. The programme was well received and looks like being another winner for the Branch. Henry ZJGK, who well known cooker of hamburgers, has decided to extend his field of interest and will be serving a cold beer and a meal for all attending the ground. The cost of this will be included in the registration fee for the day. All persons attending the day for the day of the children under 14, Children over 14 and any unaccompanied children will be charged 50c for registration.
Activities will commence with a 2 mx fox hunt followed by registration from 08.30 to 10.15. The hunt will end at 1055 in time for the

broadcast from 2WI, and the next event, a 40 mx hunt will commence at 1135 and end at 1230. A lunch break will be made from 1230 to 1330 and the first afternoon event will be an all-band mobile scramble from 1335 to 1415. At 1430 and lasting till 1545 a marathon three-transmitter 2 mx hunt will be held and prize giving will be made at 1600. During the day, pedestrian fox hunts and novelty events will be run, in addition to the usual quizzes. Some lunch refreshments for the thirsty hunters will also be available. Registration for the event may be undertaken at any time prior to or on the Field Day and all details may be had from Gordon ZJSG, 15 Marine View, Newcastle, N.S.W. 2300.

Since the installation of the new mast and co-linear aerial for 2 mx fm, at the Westlakes Radio Club, Tuggerah, signals reports from many parts of Newcastle have been most encouraging. It appears that, except for some shadowed areas, a good overall coverage is now possible. This will mean all conditions for relay of the Hunter Branch broadcasts from and to the club.

Activity on the bands during the R.D. Contest was quite good and some seldom heard call signs were evident. Jan ZJBO operated the 2AWX rig and made 111 points, while several other calls including 2AHA/VKCF, (standing for mobile car) were busy at it.

(And amid all this activity, there must be some who have made something new and delightful during the year. Well, here's your chance to air the design and build at the October meeting of the Branch to be held in room 6 of the Clegg Building, Newcastle Technical College, Tighes Hill, on Friday, 6th October. This is the annual home-built equipment competition and Branch members are invited to take part for a prize to be given at the Field Day. So come along and join in the merrymaking with such as I who will be describing my one transistor amplifier built in a matchbox. Oh! and you won't forget the Field Day will you. See you, 73, IAKX.

VICTORIA
The August meeting of the Victorian Divisional Council was held on Monday 28th. Apologies were received from John Beckett, VK3JFE, and Mike Owen, VK3ZKM. Those arriving early were served a steaming hot cup of coffee from a hot drink dispenser which is of a similar type to one which the Division has decided to buy to ease the problem of

refreshments at functions at the Divisional rooms. Another improvement at general and v.h.f. meetings will be the addition of additional chairs which will increase the seating accommodation.

The W.I.C.E.N. representative reported that the first of the vehicles is almost completed and the second has been started. At the present time the installation of the vehicles is available well before the coming summer season.

The Division's Annual Dinner will be held on Friday, 3rd November, at the Orina Room, McClure's Restaurant, St. Kilda Road, Melbourne. The charge of \$5.50 per head includes pre-dinner appetisers, the dinner and the services of a band for those wishing to dance. Don't forget, Friday, 3rd November, the Victorian Division's social event of the year. Until next month, 73, Cyril VK3ZCK.

EASTERN ZONE
Here we are again with the zone notes. I regret having to start on a sombre note. We are sorry to note the passing of our ex-zone president, Gordon ZJBB, who lived in Melbourne (ex VK3AQ of Warragul). Zone members were active in the Jamboree on the Air, they were 3BB, 3AED, 3ZCG (from Morwell); 3AZ, 3ZAB and 3ZBB were invited to the local State Disaster Plan meeting on 23rd August. Our President 3ZCG attended the communications meeting associated with the Disaster Plan meeting on 31st August. Any new boys? Please let's have it. 73, Albert Cash, LZ329.

WESTERN ZONE
Bill 3ZAX is still writing under the indignity of a bent antenna guide-post—communications OM. V.h.f. bands are very active as usual. This has led to considerations of forming a v.h.f. club for the zone. I am sure interested S.W.'s. Also worthy of note is the use of v.h.f. bands for the recent Jamboree of the Air. Taking part were Tony EZAL, Bill 3ZBB and Graham ZAE. I am sure the number of boys who turned up at 3ZAX's QTH, it was quite a popular concern. I have no doubt it is well covered in the present but can assure readers we are slowly moving back to v.h.f. Good to hear BO 3ARM on 6 mxi. However, we do long for the day when we will have a v.h.f. club. Any new boys? Cards won't send themselves. 73, Jim ZJMS.

VICTORIAN DIVISION W.I.A.
ANNUAL DINNER
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in the
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Reservations: Contact the Admin.
Secretary. Phone 41-3535.

QUEENSLAND
IPSWICH AND DISTRICT RADIO CLUB
News for this month seems to be a bit scarce, possibly because we have spent most of this month in other call areas of VK and have not been in touch with local club members. However, a little news has come to hand since I returned.
We were all sorry to hear of our Public Relations Officer's bout of the flu and hope it is well on the way to recovery by now. He is still able to send news to VKWV, the club that proves he was still on the job—wag or no wag.
On my return to the club meetings, a lot of new faces were seen and I am sure the club will be gaining more new members—the more the merrier.
It was decided that with the coming of summer, the club's 80 mx Monday hook-up at 8 a.m. in Ipswich will be given over to VKWV. The QRN will soon make 80 mx impossible to work, and a new band for the hook-up has been discussed. The eventual outcome seems to be settled on 144 Mc. and club members are now building and renovating the 2 mx gear which has been hanging around gathering dust.
A possible get together between Ipswich and Bundamba Radio Clubs has been mentioned to take place in the near future as a camp out week-end at a spot some half way between the two towns. Bundamba has been met with a lot of enthusiasm from end and final arrangements and announcements will be made when all is finalised. This could be the first time the members of the two Radio Clubs and we hope the first of many more such get togethers.

CONTEST CALENDAR
7th/9th October: VK-ZL-Oceania DX Contest (Phone Section).
7th/9th October: W.A.D.M. C.W. Contest.
14th/15th October: VK-ZL-21/28 Mc. DX Contest (Phone Section).
14th/15th October: R.S.G.B. 21/28 Mc. Telephone Contest.
21st/22nd October: "CQ" W.W. DX Contest (C.W. Section).
28th/29th October: R.S.G.B. 7 Mc. DX Contest (Phone Section).
11th/12th November: R.S.G.B. 7 Mc. DX Contest (C.W. Section).
11th/12th November: OK C.W. DX Contest.
25th/26th November: "CQ" W.W. DX Contest (C.W. Section).
9th Dec. and 10th Jan, 1968: Ross Hill Memorial V.h.f./U.h.f. Contest.



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These oscillators are of robust construction (using printed circuit board technique), reliable and of low cost.

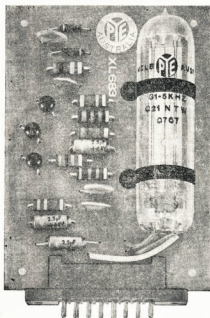
The photograph shows the PYE XL683 as an example. Mounting is by the four holes in corners of the board. Alternately, if a "plug-in type" is required, an in-line socket can be supplied as an optional extra.

SPECIFICATIONS

A typical example of the series is the XL688. These figures are general, closer tolerances can be obtained.

Frequency Range	1 Mc. to 20 Mc.
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Current Drain	15 mA. maximum.
Output	1 Volt p. to p. min. into 1K ohms.
Frequency Accuracy	±0.001% (set at factory).
Freq. Temp. Stability	(Range 0°C. to +60°C.)
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Dimensions	2" x 2.5" (5.08 x 6.35 cms.).

These oscillators are supplied complete with crystal and accurately adjusted to a specified frequency. Write for full details, without obligation, stating frequency and mounting.



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ADELAIDE	1 Ifould Street, Adelaide, S.A., 5000	23-3979
PERTH	151-155 Brisbane Street, Perth, W.A., 6000	28-4338
HOBART	141 Murray Street, Hobart, Tas., 7000	3-3707
CANBERRA	P.O. Box 766, Canberra, A.C.T., 2600	48-6677

SOUTH AUSTRALIA

Listening up in the c.w. end of 7 Me. the other early evening I bumped into a whacking sign-1 belonging to SLY, so much so, that I thought he was a newcomer to the district. I probably just over the back fence. Checking up in the Call Book, I was amazed to find that he was at Bridgewater, which after all is a little bit further than over the back fence to me. He is a stranger to me, I don't even know his christian name, but the book says

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FOR SALE: Cried 78 Page Teleprinter, good condition with service manuals, \$50. Wanted: Tape Repetitor and Distributor, also Antenna Tower suitable for Beams. Williams, VK3IZ, Phone 437-1811 (Melb.).

FOR SALE: Galaxy V, Amateur Station. VOX and 100 Kc. Calibrator installed, 12 volt Galaxy supply and home-built 240VAC supply. Heath SB610 monitor. Gencio 500 watt 50 ohm dummy load, Galaxy remote VFO unit, mic, key, rotator, Quad antenna, etc., as a complete station. Sutherland, P.O. Box 405, Port Moresby, Papua.

FOR SALE: SSB Phasing Exciter, output 9 Mc., Aswell P/S Network, 4.5 Mc. Xtal, 17 x 8 Mc. chassis with punched holes for mixer, etc., \$30. Galasso VFO 4/104 with valves, one slug mixing. Other reasonable conditions. \$14. R. N. Ferguson, 23 Floral Ave. East, Mildura, Vic.

SELL: Amateur Band Receiver with Gelsco Front End, 80-10 m., professional appearance, matching and 2 m. Converters, \$150. Yaeussu 500 Watt generator, 500 watt used, \$40. RT113 AM/CW Transmitter, 2-18 Mc., 813 mod. by \$115. 400, 4/250A, \$5. VK3MT1. Phone 277-8295 (Melb.).

SELL: \$70. 150 Kc. to 30 Mc. bandpass, FM etc. \$70. Also 150 watt AM Station, commercial quality. Wanted Johnson Match Box. Demonstration by appointment only. Phone 69-2485, South Melbourne.

SELL: Extra heavy duty P.S. 240 VAC 2500 VDC 350 mA. output. Choke input. Relay switched and metered. \$20 or exchange, such as small Com. Co. AC/DC. Offered by VK4SS, 35 Whymot St., West End, Brisbane, Qld.

SELL: Hallicrafters HT37, 80-10 m. DSB, CW, SSB, complete with Dow Relay and Transformer, Good condition. VK4CK, 72 Canning St., Warwick, Qld., 4370.

SELL: Johnson Match Box, \$70; two Command TX 7-9.1, \$12 ea.; Command TX 4-5.3, \$10; Command RX, 150-300 Mc. 2 m. 2 m. full Com. gear in first-class condition; Palco VITVM with RF probe, \$30; Heath O Multiplier, \$10; Hallicrafters RC 838, 36-164 Mc. 2 m. 2 m. 2 m. 2 m. 2 m. 2 m. 2 m. 2 m. Russell Bradshaw, VK3XSE, Phone 82-2152 (Melb.).

SELL: Pye Reporter, converted 8 m. net. AC/DC operation, less xtals, \$33. Low band FM Base Station, unconverted, complete P.S., Phones, H.A.C.B., HT PS 500 watt 250 mA, \$12. 2 m. Unit, 85 Kc., Ideal Oser, \$16. VK3ZKA, 28 Flinders Ave., Syndal, Vic. Phone 232-7480.

SELL: Receiver, Hammarlund HO170: Transmitter, Heitkitt Aachee, 240v. to 110v. transformer, base, in \$300 the lot. Let me know between Oct. 1 and Oct. 15. VK4HI, 30 Jellison St., Toowoomba, Qld. Phone 25990, ask or Frank the Cox.

WANTED: Low loss 52 ohm Co-ax., must have low loss at 2 metres. Also 8 Mc. Xtals, type FT243 or similar, suitable for overtoning to 24 Mc. for 2 metre transmitter. Contact Howard, VK3ZVH, Phone 277-1237 after 6 p.m., 225 Waverley Road, Mt. Waverley, Vic.

WANTED: Type 3 Mk. II. Receiver in perfect order and unmodified. VK4DU, James St., Curnburn Beach, Qld., 4223.

WANTED: Used 3 or 5 band SSB Transceiver with or without power supply; preferably Galaxy V. Also 4CX250 air stream socket. A. Athens, VK3AL, 101 Malvern Rd., Malvern, Vic., 3144. Phone 20-1405.

WANTED: 6 Metre FM Carphone, preferably on net position. Write to VK3AQ, 363 Warrigal Road, Burwood, Vic., 3123.

WESTERN AUSTRALIA

Hi there customers! Well that was a contest that was, of course I refer to the R.D. It seemed to me that scores generally were somewhat higher than in other years, but perhaps we have better wait for the publication of results before sticking the old neck too far out. Was rather surprised to hear Kerry 6CA, operating on 10m, and 6m, and 2m, and 1.6m. Then there was a well known member of the Division who was lucky enough to borrow some fairly high power sideband gear, complete with vox, etc. and he seemed to do battle. Being a smart cookie he put in a bit of practice before the big day but ran into trouble with the "chalkie" in the excitement. I did help from the owner who marched in armed with quite an assortment of test gear. One quick look and he burst out laughing (good sport that he was, because the problem was overcome with a simple twist of the wrist. It appears that the bewildered borrower was reading the V.F.O. dial incorrectly—clot! Boy, was my face red!

Heard that Bob 6KN was operative on 80 m. again recently. This was welcome news because he had previously indicated that he had been reclining in a hospital bed somewhere in Victoria.

Our Broadcast Officer, Bob 6RE, reports that the new 6WI transceiver is performing reasonably well, but tends to feedback with certain antenna conditions.

At the time of writing, school holidays are in full swing and many members are taking the opportunity to fit around the countryside. One happy wanderer is young 6BX who has shrugged off the cares of the workday world to visit the "big smoke" and points of interest in the south west. With a bit of luck he might pick up the 6MP who is also allegedly visiting much the same territory.

By a masterpiece of timing, Bob 6RE was able to squeeze in a bit of chicken pot, just prior to the holidays. I understand that he plans to do a bit more to his transistorised rig in the next couple of weeks.

Bob 6BT has been spreading the shack in preparation for a visit from the, you know who, and is also hopeful of working a bit of DX on 40 m. and 20 m. to be a "Chalkie" when 82BY manages to escape from Kalgoorlie for a brief week-end visit, but found time to send Bill 6WY for a couple of hours during R.D.

During a recent QSO with John W4DPI, he enquired as to the whereabouts of some of the "old-timers" like Skipper 6WS, Frank 6FL and Alan 6MO. By the way, what did it happen to Ron?

Came across in strange voice the other night while casting my shrill note on 20 m. It turned out to be Keith 6KE, putting in a re-appearance after an absence of some years. Operating a "black bird" too—hope you were able to iron out the "bugs" on 40 m. Keith and welcome back.

A report just to hand from one of my more reliable carrier pigeons suggests that Griff 6VG has entered the city limits from far off hills, with a bit of luck.

After beating a hasty retreat from the shack, I can hardly wait to get my hot little fingers to the keys. The reason for my absence is Bob 6BT, who has just appeared on 80 m. using "The Thing". What with a new receiver and he is really hitting the high spots.

Well, that wraps up for the time being, 73, Ross 6DA.

TASMANIA

Poley 7CK will soon be moving QTH to a spot just north of Launceston. Although this seems like a gain of one for the Northern Zone, he certainly will stay the same frequency. He will be moving to the south to Glenorchy. Congratulations to David, ex-TZMD, on dropping the Z and now being active on h.f. as TMD.

On 10th September a group of Launceston operators were going aeronautical mobile with equipment on the 2 m. band. They were to be piloted by Norm 7ZRG and were to head towards Flinders Island, in the hope of working into VK3.

While talking about net frequencies, Jim 7JO has at last broadened his outlook and come onto 6 m. We hope his outlook stays broad and we hope he will be on the net. Just to finish up, this month's funny story: A VK7 worked a G3 recently on 20 m. Both were using vox and both had their dogs in the shack. The VK7's dog started and started several volleys of barks flying to G-land and back again. No doubt they will be careful of using vox in future. Once bitten ... 73, TZLP.

that his initials are C. W., so it was fitting that he was on c.w. Anyway, with a signal like that he won't ever be a stranger to me again!

Listened into the usual sked between Athol 5JQ and Jack 5LN the other evening on 7 Mc. but they were better with them, they were too active and energetic for me. Athol was up to his neck with weedkiller, getting ready for the tomatoes and Jack was torn between painting and rushing out to frighten away several millions of "spogies"—his calculation, not mine—who were booking their seats in the orange tree for the night. I was quite exhausted after a few minutes listening to such activity, and left them to it. Anyway, what is Athol doing growing tomatoes? Has he heard about my venture into the lettuce field? This will take some watching!

Warrant Officer Len Baker—Len 5OB, 5OC, to you—retired this month from the R.A.A.F. after 27 years' service, but his tradition of service will be carried on by his son John, who was recently commissioned as a technical officer. Len was honored with a parade of 24 City of Adelaide Squadron at Edinburgh Airfield on the Sunday of his retirement, and in recognition of his services the R.A.A.F. Air Commodore N. P. Ford presented him with a certificate of merit for outstanding service. Len has served the United Kingdom, the Commonwealth and throughout Australia. We dip our lids, Len—never knew you were so famous—photo in the paper and all!

The "Chief Duck" of 5L-Phil 5NN to you—decided that he would construct a little gadget to make operation in the R.D. Contest a little easier, to wit, a combination microphone and microphone which would leave his hands free for the clerical work involved. It turned out to be an outstanding success from all points of view, and as he rallied his army of duck talkers to the cause, he was indeed a proud man. However, pride cometh before a fall, and his young lieutenant brought him a cup of coffee at some point through the contest, he clean forgot his little gadget and swiftly put the cup to his lips, to which the microphone was attached. The result was that "Chief Duck's" abdomen received large chunks of hot coffee. Being on "The Thing" it was not possible to remove them exactly, but, although, am given to understand that no such words have as yet ever appeared in his a.s.b. column! You beauty!

Incidentally, I note with some suspicions, that he received, for the second year in succession, the same report of 88 from a certain female stationer in VK2. Thank the fates again that I am pure!!!!

73, de 5FS—Pansy to you.

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115-145 Mc. Employs heterodyne exciter in transmitter. TT15 p.a. Single xtal locks Tx and Rx on same frequency. In-built modulator. Supplied with 4.86 Mc. xtal. \$30, circuit \$1.

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★ PERSPEX SHEET

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New shipment. 600 v.v. Values: 0.001, 0.02, 0.005, 0.0005, 0.0002, 0.0001 uF. \$2 for 80, plus freight.

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Miniature transmitter radio type pots. 2 megohms and 5 megohms. 12c each or 10 for \$1.00.

★ SPECIALS

New 815 valve, \$1. New DA41 (TZ40), \$1.50. 7-pin skirted Valve Sockets. P.T.F.E. insulation, silver plated, only 20c each, c/w. shield. 9-pin skirted P.T.F.E. Valve Sockets with shield, 50c ea. 3 uF. 1000v. d.c. Block Capacitors. Only 25c each or \$2 per dozen

★ TELEXMAX T75 FREQUENCY METER

75-1000 Mc. Internal 5 Mc. Crystal Standard. V.h.f. version of BC221. As new condition. \$150.00 plus freight.

★ MARCONI TF1168/1 HIGH DISCRIMINATION OSC.

138.9 to 161.1 Kc. in 1 c.p.s. calibrated steps. Excellent condition. \$150.00.

★ CAPACITORS

Block Type: 10 uF. 750 v.v., \$1.50 ea.; 6 uF. 750 v.v., \$1.25 ea. Electrolytics, can type: 16 uF. 500 v.v., 50c ea.; 8 uF. 500 v.v., 40c ea.

● A111 9 Mc. SOLID STATE S.S.B. EXCITER

Incorporates vox amplifier, mic. amp. and relay amp. Specifications: 10 transistors, 9 diodes. Filter, xtal KVG XF9A. Carrier suppression, >55 db. Sideband damping, 45 db. Supply voltage, 12 volts \pm 10%. Audio frequency response, 350-3,000 c.p.s. Mic. input, 1 mV. on 5K Ω (for low impedance mic. 50-300 Ω).

Price \$120.00

● A112 5 Mc. SOLID STATE V.F.O.

Freq. coverage: 4950-5550 Kc. Freq. stability: Long Term, 100 c.p.s. in 12 hours; Short Term, 200 c.p.s. to warm up. Output: 350 mV. on 220 Ω load.

Price \$22.00

With A111 and A112 combination operation is possible on 80 and 20 metres.

Available soon! Solid State all-band mixer and driver to drive 500w. nal.

★ PETERSEN RADIO (U.S.A.) 100 Kc. XTAL CALIBRATORS

Comprising 1 transistor 100 Kc. osc., 1 transistor emitter follower. Fibre glass printed circuit board. Provides accurate harmonics to 144 Mc. Trimmer on oscillator for zero beat with WWV. Xtal accuracy 0.005%. Power requirements, 15v. d.c. at 14 mA. Size 2 1/2" x 1 1/4". \$22.00 inc. tax.

★ CRYSTALS

Personal shoppers only, \$1 each.

★ MILLER 455 Kc. PRE-WIRED I.F. STRIPS

Comprises two i.f. stages, diode detector, 55 db. gain, NPN silicon transistors, d.c. requirements 6v. d.c. 2 mA., size 1 1/2 x 1/2 x 1/2 inch. \$8.70 inc. tax.

★ TR10A MULTIMETERS

100,000 ohms per volt. Ranges, d.c. volts: 0.5, 2.5, 10, 50, 250, 500, 1K; a.c. volts: 2.5, 10, 50, 250, 1K; d.c. current: 10 uA., 1 mA., 25 mA., 250 mA. 10 amp.; resistance: 20K, 200K ohms, 2 megohms, 20 megohms. To clear, \$25.95.

★ POTENTIOMETERS

Wire wound, 40c each; carbon, 25c each.

★ RESISTORS

1/4 watt, I.R.C., Welwyn, Elre, Ducon, Philips, \$2 per 100.

★ 416B PLANAR TRIODES

Gold plated. Special. Ideal for 432 or 144 Mc. \$4.00 ea.

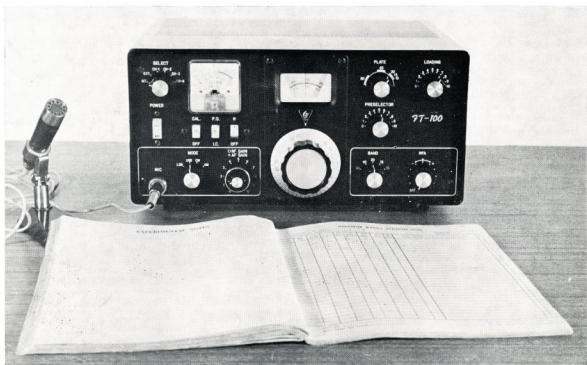
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Combining all the features you expect in a modern s.s.b. transceiver, PLUS many more:-

THE FT-100 SSB-CW-AM Transceiver incorporates a selective ultra-modern six-crystal lattice filter designed to give excellent audio quality and an easy-to-tune signal. Use of transistors ensures reliability with low current drain. Ideal for portable or mobile. Overall transmission efficiency approx. 45%! Receiver fully transistorised, drain 250 mA.; transmit standby, 2½ amp.; transmitting average, 6-8 amp..

SELF-CONTAINED power supply is built-in, voltage regulated, can be used on 230v. a.c., 50 c/s., and 12v. d.c. simply by plugging in the special power cords provided. Makes mobile, portable or home station operation a dream.

FACILITIES: Selectable USB-LSB-CW-AM. Exceptionally stable VFO, no warm-up. Built-in facility for crystal-locked channels. 100 kc. calibrator. Dial is similar to that used on the larger "F" Series equipment—precision gear driven type giving accurate linear tuning with 1 kc. readout. Provision for external VFO. Frequency ranges: 3.5-4, 7-7.15, 14-14.5, 21-21.5, 28.5-29 Mc. Only valves used are transmitter driver 1 x 12BY7 and p.a. 2 x 6JM6. Rated at approx. 120w. p.e.p. input. Suitable for standard p.t.t. high impedance microphone. Dual "S" meter and p.a. cathode current, a.l.c., vox and p.t.t., 10 kc. off-set tuning, variable antenna loading, antenna relay. 33 transistors, 42 diodes, 3 valves. Conservatively rated, heavy duty power transformer for best regulation and cool operation. Connections at rear for co-ax. antenna line, power, speaker, and linear control. Size 6" x 13" x 10½". Professionally finished in black enamel with white etched panel.

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